

Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi

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APPROVAL

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DEDICATION

This research study is dedicated to my husband Levison and my children; Patience, Prince and Prudence, for their inspiration and support throughout my course of studies.

ABSTRACT

This was a qualitative cross-sectional study which was conducted in health centres, in Blantyre district, in southern region of Malawi, between September and December, 2012. Data was collected using semi-structured interviews, focus group discussion, review of records and observation. Eleven (11) health centres and a referral hospital were included. 29 health workers, 4 patients and 2 guardians participated in the study. Malawi continues to experience high maternal deaths. Although, efforts are in place to reduce maternal deaths, there is need to explore how maternal cases are managed in health institutions.

The study therefore sought;

1. To assess how first level health care providers in Blantyre manage patients of pre-eclampsia and eclampsia before referral to the second or third level of care
2. To assess barriers to proper management of patients with pre-eclampsia and eclampsia at the first level of care
3. To obtain suggestions for the improvement of the management of patients with pre-eclampsia and eclampsia at the first level facility of care

In exploring how pre-eclampsia and eclampsia are managed at the first level of care, the data was collected from three sources: health workers at referral facility, health workers at the health centres and from patients with pre-eclampsia and eclampsia. The sources were identified based on their proximity to the referral hospital and within a single district.

The study established that, despite a significant awareness of the prevalence of pre-eclampsia and eclampsia among pregnant women, health workers both at first level facility of care and at the referral facility had numerous challenges in the management of these complications. Some of the challenges were patients' delay in reporting to health centres, inability to diagnose the condition due to lack of equipment and materials resources, inability to provide adequate care to patients due to understaffing, lack of or insufficient drugs; delays in transporting patients to referral facility due to poor transport system, skill decay due to infrequent occurrence of cases, lack of supervision and feedback from superiors on how the health centres are providing first level care to patients.

The management of pre-eclampsia and eclampsia at the first level facility of care also varied between health centres as well as among individual health workers; indicating need for refresher courses to upgrade and synchronize the process of handling the patients. The study further established that patients do not have enough knowledge about pre-eclampsia and eclampsia, often culturally interpreted.

In conclusion, management of pre-eclampsia and eclampsia at the first level facility of care continues to be challenging in Blantyre, Malawi. Application of knowledge by health workers is still weak. Most health workers in first level facilities face numerous problems in the management of pre-eclampsia and eclampsia.

Therefore to improve management of patients with pre-eclampsia and eclampsia, knowledge and skills in identification and management of pre-eclampsia and eclampsia at the first level facilities need to be improved; health centres must be provided with all the necessary materials and drugs; referral cases must be transported to hospital without delay; supervision of pre-eclampsia and eclampsia at the first level facility of care must be strengthened. Feedback from the hospital is a necessary ingredient for ensuring that pre-eclampsia and eclampsia at the first level facility of care is improved. There is also need to strengthen education of patients during antenatal care on pre-eclampsia and eclampsia and not to rely on cultural beliefs. Increasing staffing in health centres would also help in improving the management of pre-eclampsia and eclampsia at that level.

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LIST OF ABBRIVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BDHO	Blantyre District Health Office
BEmOC	Basic Emergency Obstetric Care
CEmOC	Comprehensive emergency obstetric care
CFR	Case Fatality Rate
CHAM	Christian Hospital Association of Malawi
COMREC	College of Medicine Research Ethics Committee
DFID	Department of International Development
DIC	Disseminated Intravascular Coagulopathy
EmOC	Emergency Obstetric Care
EU	European Union
FGD	Focus Group Discussion
GDP	Gross Domestic Product
HELLP	Haemolysis Elevated liver enzymes Low platelets
HIV	Human Immune Deficiency
IMF	International Monetary Fund
IV	Intravenous
MDA	Maternal Death Audit
MDG	Millennium Development Goals
MDHS	Malawi Demographic Health Survey
MgSO₄	Magnesium Sulphate
MMR	Maternal Mortality Ratio
MoH	Ministry of Health
QECH	Queen Elizabeth Central Hospital
SPSS	Statistical Package for Social Science
SWAP	Sector Wide Approach
TA	Traditional Authority

TB	Tuberculosis Bacillus
TBA	Traditional Birth Attendant
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UK	United Kingdom
WHO	World Health Organization

DEFINITION OF TERMS

Preeclampsia: a multisystem disorder which is defined by a raised blood pressure and the presence of protein in urine. The condition is a common complication of pregnancy, and can occur at any time during the second half of pregnancy, during labour or in the first few weeks after delivery.

Eclampsia: a complication of pre-eclampsia characterized by convulsions in the absence of other causes of convulsions such as epilepsy or meningitis.

Lifetime risk of maternal mortality: The probability of maternal death faced by an average woman over her entire reproductive life span

Maternal death: Death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of its duration and site, from any cause related to or aggravated by the pregnancy or its mismanagement, but not from accidental or incidental causes

Maternal mortality ratio: Number of maternal deaths during a given time period per 100 000 live births during the same time-period

Emergency obstetric care: These are key medical interventions compiled by WHO, UNICEF and NFPA that are used to treat the direct obstetric complications that cause the vast majority of maternal deaths around the globe.

Basic Emergency Obstetric Care facility: is a health facility which provides the first six signal functions that are necessary to save the lives of women with obstetric complications. The services include: administration of parenteral antibiotics, parenteral oxytocic drugs, parenteral anticonvulsants, manual removal of placenta, removal of retained products of conception and assisted vaginal delivery

Comprehensive Emergency Obstetric Care Hospital: A hospital facility which provides the eight signal functions that are necessary to save the lives of women with obstetric complications.

The services include: administration of parenteral antibiotics, parenteral oxytocic drugs, parenteral anticonvulsants, manual removal of placenta, removal of retained products of conception, assisted vaginal delivery, surgery and blood transfusions

Skilled birth attendant: A Skilled birth attendant is defined by the World Health Organization as a person 'with midwifery skills (for example, doctors, midwives, nurses and medical/surgical assistants) who has been trained to proficiency in the skills necessary to manage normal deliveries and diagnose or refer obstetric complications

CHAPTER ONE

INTRODUCTION

This paper has been divided into six different chapters. The first chapter includes the introduction and the background that presents the general country profile, the disease burden, the statement of the problem and study objectives. In chapter two a review of relevant literature is presented. The third chapter presents the study methodology and data analysis while the fourth chapter presents the findings; and last but not the least, the discussion of findings, recommendations, and the conclusion are presented in chapter five and six.

1.0. Introduction

Many women are still dying from complications of pregnancy despite global efforts to reduce maternal deaths by 75% by 2015. It was estimated that 287000 women died in 2010, a 47 % reduction in maternal mortality rate which is far from the 75% target. Ninety nine per cent of these deaths occurred in developing countries, with Sub-Saharan Africa alone contributing to 56% (161000 deaths) [1]. The major causes of maternal deaths remain the same and they include obstetric haemorrhage, sepsis, complications of abortion and eclampsia [2; 3]. Malawi has been identified as having one of the highest maternal mortality ratios in Sub-Saharan Africa with a ratio of 675 deaths per 100,000 live births in 2010. Pre-eclampsia and eclampsia contributed to 8% of these deaths [4; 5].

Globally, eclampsia contributed to 12% of all maternal deaths [2]. In Africa 9.1% of maternal deaths are caused by hypertensive disorders of pregnancy, making them the third leading cause of maternal deaths [3].

Pre-eclampsia and eclampsia not only affect the mothers' lives, but also their unborn babies as well. It is estimated that 26.4% of all neonatal deaths are due to pre-eclampsia and eclampsia [6].

Pre-eclampsia is a condition that exclusively affects pregnant women from above 20 weeks gestation and is marked by an elevation of blood pressure appearing for the first time in pregnancy and the presence of protein in urine. Eclampsia, on the other hand, is the occurrence of convulsions in the presence of pre-eclampsia and in the absence of other causes of convulsions such as epilepsy [7; 8].

Like most causes of direct maternal deaths, deaths from eclampsia are preventable. This can potentially be achieved through increased accessibility to emergency obstetric care, which can effectively be initiated by skilled health care providers at all levels of care [2; 9; 10]. The success in the management of pre-eclampsia and eclampsia calls for multi-level efforts. Currently it is recommended by World Health Organization (WHO) that management of pre-eclampsia and eclampsia be done at referral facilities that have the capacity to deal with adverse complications [7; 11; 12; 13]. The primary management of severe pre-eclampsia and eclampsia is delivery of the baby and placenta. However, reduction of blood pressure with antihypertensive drugs, and prevention and control of convulsions with magnesium sulfate to stabilize the patient are essential before effecting delivery [7; 11]. WHO recommends that great efforts be taken at the first level of care to stabilize the patient before referral to the secondary or tertiary level of care [2; 11]. Stabilization at the first level of care entails establishing and ensuring an open airway and prevention of injury to the patient, insertion of intravenous infusions, Foley's catheter, oxygen therapy, and administration of anticonvulsant and antihypertensive drugs depending on the condition at hand [11]. Properly stabilized patients have reduced days of hospitalization and a high chance of survival [2; 11]

In Malawi where primary health facilities act as entry points to the formal health care delivery system, primary levels are crucial points for successful management of all complications of pregnancy, including pre-eclampsia and eclampsia. Pre-eclampsia is a complex disease in which several providers at different levels of care interact in an on-going, coordinated manner to provide appropriate, effective care. Suboptimal care at any juncture along the continuum of care, e.g. at the first level of care, may lead to adverse, even fatal, outcomes which is why it is important to have insights on how pre-eclamptic and eclamptic patients are managed at each level. Through these insights the healthcare workers themselves and senior management may be able to formulate strategies to remedy any problems. Like most developing countries, Malawi has a multi-level health care delivery system. The levels consist of primary, secondary and tertiary facilities. There are only four tertiary government hospitals and one private tertiary hospital in the whole country. Health centres serve as primary level facilities of care, while district hospitals basically serve as secondary levels of care [14]. All obstetric complications including pre-eclampsia and eclampsia are currently managed at secondary and tertiary levels of care.

Nevertheless, health centres still remain major entry points for patients into the formal health care delivery system [14].

In Blantyre District, Malawi, pre-eclampsia and eclampsia and all other obstetric complications are managed at Queen Elizabeth Central Hospital (QECH). This is one of the tertiary teaching hospitals in the southern part of the country. In this district, patients with obstetric complications are referred directly from health centres to QECH because there is no district hospital that serves as secondary level of care.

Pre-eclampsia and eclampsia are among the major complications managed at this hospital and are among the major direct causes of maternal deaths. Deaths due to eclampsia almost doubled from 6.4% to 12.5% between 1999 and 2008[15; 16]. Inadequate pre-referral care at the first level has been reported as one of the factors that contribute to maternal mortality at this hospital [15; 16].

So far, there is limited information on studies conducted to critically evaluate care of patients with specific obstetric complications at the primary level. Studies conducted elsewhere and in Malawi have focused on the actual management of patients with pre-eclampsia and eclampsia at the secondary and tertiary levels and not on the health care providers themselves [17; 18; 19; 20; 21].

The few studies that were identified as highlighting health care providers' views, did not necessarily focus on specific conditions like pre-eclampsia and eclampsia; but general experiences in the course of the health care providers' work [22; 23].

This qualitative study therefore sought to explore first-level health care providers' perspectives on the management of patients with pre-eclampsia and eclampsia before referring them to the central hospital. It is hoped that the findings will inform the health authorities on areas that need urgent attention as well as inform long-term strategic improvements.

1.1 Malawi Country profile

1.1.1 Geography

Malawi is a sub-Saharan African country located south of the equator. It is bordered to the north and northeast by the United Republic of Tanzania; to the east, south, and southwest by the People's Republic of Mozambique; and to the west and northwest by the Republic of Zambia [4].

The country is 901 kilometers long and 80 to 161 kilometers wide. The total country area is approximately 118,484 square kilometers of which 94,276 square kilometers are land. The remaining area is mostly composed of Lake Malawi, which is about 475 kilometers long and delineates Malawi's eastern boundary with Mozambique [4].

Administratively the country is divided into three regions: the Northern, Central, and Southern Regions. There are 28 districts in the country. Six districts are in the Northern Region, nine are in the Central Region, and 13 are in the Southern Region. Blantyre district where the study will be conducted is located in the southern region of Malawi. (Figure 1) The districts are subdivided into Traditional Authorities (TAs), presided over by chiefs. Each TA is composed of villages, which are the smallest administrative units, and the villages are presided over by village headmen. Malawi has a tropical continental climate with maritime influences.

Rainfall and temperature vary depending on altitude and proximity to the lake. From May to August, the weather is cool and dry. From September to November, the weather becomes hot. The rainy season begins in October or November and continues until April [4].

1.1.2. Population, socioeconomic and health indicators

Currently Malawi has a population of 13.1 million, representing an inter-census population growth rate of 2.8 percent per year between 1998 and 2008 [4]. The total fertility rate is at 5.7 children per woman [4]. There are more females 51.4 % than males. Of these women 46 % are in the reproductive age group (15-49 years) [4]. Teenage pregnancies remain a public health concern considering the complications and deaths associated with such pregnancies. Currently 26 % of pregnancies are from teenagers. And the median age at marriage is 18 year [4; 5].

1.1.3 Economy

The economy is predominately agricultural with about 80% of the population living in rural areas. Agriculture accounts for 30 percent of the gross domestic product (GDP). The country's major exports are tobacco, tea, and sugar. These produce account for approximately 85 percent of Malawi's domestic exports [4; 5]. Tobacco is the main agriculture export earner, accounting for more than 70% of Malawi's agricultural exports. Manufacturing and other industry and services account for 65% of GDP [14]. And 36 % of the country's budget is dependent on aid [14].

Even though progress report on poverty reduction shows that Malawi is on track to achieving millennium development goal number one of reducing extreme poverty by half by 2015, a larger proportion of the population (39 %), still live below the poverty line of less than a dollar per day [24]

1.2 Health care delivery system organization

The WHO defines health systems as “the activities whose primary purpose is to promote, restore and/or maintain health” [25]. The main responsibility to provide public health services in Malawi, lies with the Ministry of health (MoH), contributing to 63% of all health services. The other contributors include the Christian Health Association of Malawi (CHAM), Ministry of Local government (MoLG), private practitioners and Banja la Mtsogolo a nonprofit making nongovernmental organization (NGO) which together contribute 37%. There are also informal providers such as traditional birth attendants, whose exact number and extent of service provision is unknown [14; 26]

1.2.1 Patient Referral System in Malawi

A referral system can be described as a set of activities undertaken by a healthcare provider or facility in response to its inability to provide the quality or type of intervention suitable to the needs of the patient [27]. To be effective a referral must be a two-way process that requires coordination and information exchange between the referring facility (usually at the primary care level) and the first referral hospital [27].

The referral system in Malawi is upstream. Patients from home or other informal health care providers such as traditional birth attendants are first seen at the health posts, primary health centres or community hospitals [14]. These health facilities, as already pointed out, are entry points into the entire formal health care system. At this level, patients are screened and treated for their minor illnesses and diseases. Reproductive health services such as antenatal care, uncomplicated deliveries; and family planning are also offered at this level unless they develop a complication [14]. Critical cases or complications of pregnancy beyond the primary level’s intellectual and infrastructural capacity are referred to the next level which usually is a district hospital [14].

The transportation of patients is facilitated by the primary level staff and sometimes the family members. The common transport used is the ambulance which is called from the district hospital

(second level of care); because not all primary health centres have ambulances. In case of obstetric complications, and on the event of non-availability of a car ambulance, a motorbike ambulance has become an alternative in some health centres in order to reduce transportation delays [27].

From the secondary level of care facilities, patients are referred to the central hospitals which are at a tertiary level and offer specialist treatment. In some cases patients tend to bypass the primary health centres to the secondary level of care depending on proximity of the facility. This happens mostly in places where CHAM hospitals exist [14].

1.2.2 Financing

The MoH is financed by the government and internal and external donors [29]. Currently all MoH public health services are free at point of delivery, however there are still indirect costs that are incurred mainly by the rural population to travel to the facilities due to long distances [29]. The total national expenditure on health is limited and is currently at US\$ 20 per capita [29]. This limitation tends to jeopardize the quality of health services rendered in the health facilities. To cover for this deficit, the country greatly depends on foreign aid for most of its health services. Currently, donors contribute to 60% on the total health expenditure. However, this dependency on foreign aid had negative implications on delivery of maternal and child health services in 2011; when DFID and other donors suspended aid to the country [30].

Prepayment schemes contribute to less than 3% of the health spending. Most of the contribution from private sources is obtained from households in the form of out-of-pocket owing to 9 to 12% of the expenditure [29].

1.2.3 Human resource

Human resource is very important in provision of health services, and more especially provision of reproductive health services which are required to reduce maternal mortality. Despite embarking on a 6-year Emergency human resource plan (2005-2010 to increase staffing levels, there is still a major crisis of human resources in Malawi. Nurse/ midwives who are very crucial in the management of obstetric complications such as eclampsia at the first level facilities are very few. Currently there are 4812 nurses, 958 clinical officers, 535 medical assistants and 265 physicians, excluding the other cadres [31]. It is estimated that there are only 2 physicians and 36 nurses per 100,000 populations [31]. The crisis is compounded by migration of health workers both internally to NGOs and externally to the western countries like United Kingdom and United States [14]. There is need therefore for training of more human resources for health to ensure adequate staffing at all facility levels of care. This will in turn improve management of patients with obstetric complications like eclampsia and help to reduce maternal mortality.

1.3. Background

One of the eight Millennium Development Goals (MDG) adopted at the 2000 Millennium Summit was to improve maternal health [32]. The two targets for assessing progress in improving maternal health (MDG 5) are reducing the maternal mortality ratio (MMR) by three quarters between 1990 and 2015, and achieving universal access to reproductive health by 2015[1]. Even though there have been some improvements towards the achievement of this goal, maternal mortality still remains unacceptably high in some Sub-Saharan countries, including Malawi [1].

A big difference still exists in terms of exposure to risk of maternal deaths between developing and developed countries. Currently the life-time risk of dying from pregnancy related complication in Sub Saharan Africa is 1 in 39 women as opposed to 1 in 3800 women in developed countries [1]. Similarly, Malawi has a high life-time risk of maternal deaths of 1 in 36 women [1]. High fertility rates, inaccessible health care services, and high HIV prevalence, commonly experienced by developing countries, have been implicated for these differences [32].

Eclampsia is one of the major causes of maternal and perianal morbidity and mortality [2]. The other causes of global maternal deaths include obstetric haemorrhage (25 %), sepsis (15 %), complications of unsafe abortion (13 %), and obstructed labour (8%). And eclampsia contributes to 12% of these deaths [2].

Eighty percent (80%) of all causes of maternal deaths including deaths from eclampsia are avoidable, through access to essential maternal health care services [33]. However in most cases, such health services are inadequate or unavailable in most developing countries [34; 35]. The essential services in this case include family planning, antenatal care, and skilled attendants at birth, access to emergency obstetric care, postpartum care; and newborn care [33].

The most emphasized of these services, not disregarding the other services, is access to emergency obstetric care [9] which is very crucial for prevention of deaths from eclampsia. Emergency obstetric care is a package of life-saving medical interventions that are required to treat women with major direct obstetric complications in order to save their lives [9]. The interventions include administration of parenteral antibiotics, parenteral oxytocic drugs, manual removal of placenta, removal of retained products of conception, assisted vaginal delivery, surgery, blood transfusions, and administration of parenteral anticonvulsants [9]. Administration

of parenteral anticonvulsant like magnesium sulphate is crucial in preventing convulsions in severe pre-eclampsia and in controlling convulsions in patients with eclampsia [9].

These interventions are grouped into two; basic and comprehensive, depending on the capacity of the facility providing them. A basic emergency obstetric care facility provides all the interventions listed above except for blood transfusion and surgery which are done at the comprehensive emergency obstetric care facility in addition to all the interventions offered at the basic facility [9]. WHO recommends one comprehensive emergency obstetric care (CEmOC) facility and 4 basic emergency obstetric care (BEmOC) facilities per 500,000 populations to adequately manage complications of pregnancy and save lives [9]. Despite this recommendation, Malawi like most developing countries has not been able to achieve the requirement for the basic obstetric care mainly due to limited obstetric skills, equipment and supplies [34]. However, due to shortage of physicians in Malawi, skilled attendants at the first level facilities of care are specially trained to initiate lifesaving procedures for complicated cases like those of eclampsia in order to cover up for this shortage[36].

Classification of facilities into CEmOC and BEmOC has caused misunderstanding in some cases leading to health care providers being reluctant to provide emergency care when their facilities have not been declared BEmOC [2]. As such, WHO calls upon providers at first level of care to stop thinking in terms of which facility is basic or comprehensive, and instead think in terms of what could be done at that particular point in time to save a woman with an obstetric complication [2]. WHO further states that, the main role of a skilled attendant at the first level of care, must be to identify and resolve complications as they arise, in order to avoid degeneration into life-threatening emergencies, and she/he must be able to respond to life-threatening emergencies when they occur, either directly or by calling on referral level of care [2].

1.3.1 Maternal Health in Malawi

Malawi has one of the highest maternal mortality ratios in Sub-Saharan Africa, currently at 675 per 100,000 live births [4]. Malawi based on the 1992 mortality ratio of 620 per 100,000 live births, as its bench mark for achievement of the MGD 5 [37]. This means that to achieve the MDG 5 target by 2015, the current figure has to be reduced to 155 per 100,000 live births; which the government concedes to be impossible, considering the limited time remaining. The high

mortality is attributed to HIV/AIDS, shortage of human resource, inadequate resources in hospitals, gender inequality and traditional practices [4; 37].

The government's main efforts to reduce maternal mortality include the development of the Roadmap to accelerate maternal mortality reduction. This plan includes strategies to increase the availability, accessibility, utilization and quality of skilled obstetric care during pregnancy, childbirth and postnatal period at all levels of the health care delivery system; to strengthen the capacity of individuals, families, communities, civil society organizations and government to improve maternal and neonatal health [38]. Other efforts included the introduction of the 6 year Safe motherhood project (1998 to 2004) to reduce deaths and chronic ill health of women as a result of childbirth in the southern region of Malawi, the adoption of the Sector wide approach (SWAP) in 2004 which ended in the introduction of essential health care package, and the 6 year Emergency Human Resources Plan which aimed at improving human resource retention and to increase the staffing levels [31; 38]. The essential health care package at the first level facility of care for maternal and neonatal health includes focused antenatal care, intrapartum care with BEmOC services of which includes management of pre-eclampsia and eclampsia, and newborn care and postnatal care[38].

1.3.2. Malawi's progress on MDG 5

According to the Millennium Goal progress report for 2012, MDG 5 is the only millennium goal that is lagging behind and is far from being attained by 2015[32]. Using the indicators for assessing improvement in maternal health which includes the maternal mortality ratio, antenatal coverage and proportion of births attended by skilled attendants, the report indicated that there has been some progress towards achieving the MDG 5, though little to have a strong impact [32]. The MDHS report 2010 also indicated an antenatal coverage of 95%, slightly lower than that reported by MICS 2006, (97%), though the difference is not statistically significant [4;39]. Among other things, underutilization of reproductive health services was attributed to long distances and lack of transport [4]. There was a great improvement in skilled attendance at birth with 71 per cent of births being assisted by skilled attendants. This was a greater increase from 54% skilled attendance reported by MICS study in 2006[39]. There has been a marginal increase in contraceptive uptake from 41% to 46%. Maternal mortality ratio is currently at 675 per 100,000 live births, a decrease from 984 which was reported in 2004 [4]; and 8% of these deaths are due to eclampsia [5]. Although some progress has been made to improve maternal health in

Malawi, there are still some challenges that need to be addressed. One of the challenges crucial to reduction of maternal mortality due to eclampsia is the issue of accessibility to emergency obstetric care. Currently, functional basic emergency care facilities are very few [34], which calls for more efforts to improve the situation. Other efforts also need to be considered to reduce maternal mortality such as focusing on improving the quality of management at first level facilities. Apart from well-established screening activities for prevention of mother to child transmission of HIV [4], complications like pre-eclampsia which can easily be detected through antenatal care have not been well targeted. There is need to intensify interventions that target individual complications like pre-eclampsia too, in order to prevent progression to eclampsia which kills mothers.

This study therefore, sought to explore perspectives of first-level healthcare providers on the management of patients with pre-eclampsia and eclampsia before referring to the tertiary level of care.

1.4 Problem statement

Conforming to the WHO recommendations on management of patients with obstetric complications before referral [2], and being determined to reduce maternal mortality, the MoH recommends that patients with obstetric complications must receive life-saving treatment at the first level of care in order to stabilize them before referral for further management at the next level [11; 13] in order to reduce the proportion of patients' hospitalization and deaths from obstetric complications [2].

Despite a national recommendation to stabilize critical patients before referral, Queen Elizabeth Central Hospital (QECH) as a referral continues to receive patients with eclampsia and other obstetric complications in poor condition from some of its surrounding health centres and private clinics. Lack of life-saving obstetric care at the health centres has resulted in increased maternal and perinatal mortality [16].

Apart from blaming the first-level healthcare providers for the poor outcome of patients at the referral hospital, there is a paucity of information on studies or quality assurance activities done to understand or appreciate management from the healthcare providers' point of view. Some studies have shown that giving health care providers a voice tends to help them to reflect on their

own practices and attitudes and creates room for instant improvements [23]. This study sought to explore first level healthcare providers' perspectives on the management of patients with pre-eclampsia and eclampsia before referring them to the next level of care in order to identify gaps and barriers to the management of patients with pre-eclampsia and eclampsia.

1.4.1 Rationale

Pre-eclampsia and eclampsia still kill mothers in pregnancy and child birth, and yet these deaths can be prevented. Early detection and prompt intervention at the first-point of contact is crucial in averting these deaths. WHO recommends that emergency life-saving care be given to patients at the first contact prior to referral in order to increase the chance of survival at the referral facility [2; 11]. However, studies previously investigating pre-eclampsia and eclampsia were conducted at secondary and tertiary levels of care despite the fact that patients make their first contact with the formal health system at the primary level. These studies also had much focus on the care provided and not the providers of care themselves [17; 18; 19; 20; 21]. The findings of the study will help to inform and create awareness of the context in which first-level healthcare providers manage patients with pre-eclampsia and eclampsia. The information will also in turn help the health authorities devise strategies for improving the quality of care at the first level of care in order to reduce maternal and perinatal morbidity and mortality from pre-eclampsia and eclampsia. Moreover the findings will help first-level healthcare providers become aware of their own practices, strengths and weaknesses in the management of pre-eclampsia and eclampsia. Having insight into the perceptions of the health workers will enable those involved in training health workers to develop effective refresher courses that will be based on real challenges in the management of pre-eclampsia and eclampsia complications. Lastly, the research will also help training institutions improve current curriculum with regards to the management of pre-eclampsia and eclampsia.

1.5 Objectives

Main objective:

To explore first-level healthcare providers' perspectives on the management of patients with pre-eclampsia and eclampsia before referral to the hospital.

Specific objectives

1. To assess how first-level healthcare providers in Blantyre manage patients of pre-eclampsia and eclampsia before referral to the second or third level of care
2. To assess barriers to proper management of patients with pre-eclampsia and eclampsia at the first level of care
3. To obtain suggestions for the improvement of the management of patients with pre-eclampsia and eclampsia at the first level of care

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Several studies have been reviewed in relation to the proposed study; both quasi and systematic reviews. The focus of most studies on pre-eclampsia and eclampsia was at secondary and tertiary levels of care and not much was found that was done at the primary level of care which was the area of interest in this study. In this chapter a presentation of literature on what is known on management of pre-eclampsia and eclampsia will be done. However, due to paucity information on qualitative studies done at the first level facility of care, a few studies that were found that highlighted health care providers' views on quality of care in general were included in this review.

2.1 History

The history of pre-eclampsia and eclampsia dates back to the ancient times of Hippocrates in the 4th and 5th century. Although not termed as pre-eclampsia and eclampsia, the physicians at that time documented about it as a presence of headache accompanied by heaviness and convulsion during pregnancy and observed that such a presentation was critical for the patient. It was not until 1619 when the term eclampsia was first used in Varandaeus' treatise on gynecology [40].

Throughout the centuries physicians have been trying to explain the cause of pre-eclampsia and eclampsia. Some explanations included the belief that eclampsia was nature's way of trying to free the organism of any morbid element; or that the expanded pregnant uterus increased pressure on the descending blood vessels and the increased pressure in turn led to regurgitation of blood in the head ,resulting in an overload of the cerebral vessels and subsequent convulsions[40]. Basing on these theories, the treatment of eclampsia involved bloodletting to ease the pressure, cold water splashing, warm baths, and use of opiates and hastening of delivery [40].

The causation theories that are used now are based on the theory that was developed in 1960. The theories relate the development of pre-eclampsia to the abnormal placentation and restricted blood flow to the placenta [40].

2.2 Incidence and mortality

Pre-eclampsia remains one of the leading causes of maternal and perinatal morbidity and mortality worldwide. Every year 8 % of all pregnancies are complicated by pre-eclampsia and eclampsia worldwide [12; 41]. The incidence ranges from 3% to 7% for nulliparous and 1% to 3% for multiparas [41]. Eclampsia on the other hand, complicates one in 2000 deliveries in the United Kingdom and in low- and middle-income countries it complicates between one in 100 and one in 1700 deliveries [42]. Every year, 63000 women die from eclampsia which is approximately 12% of all maternal deaths (2). Eighteen (18 %) of all maternal deaths in developing countries are due to hypertensive disorders of pregnancy which includes pre-eclampsia and eclampsia (43). In Africa 9.1% of maternal deaths are caused by hypertensive disorders of pregnancy, making them the third leading cause of maternal deaths [3].

In some African countries like South Africa, pre-eclampsia and eclampsia affects 12% of all pregnancies and are the second common causes of maternal deaths [44]. A population based inquiry on maternal deaths for the period of 1999 to 2001, revealed that pre-eclampsia and eclampsia contributed to 83 % of the 622 deaths from hypertensive disorders of pregnancy [44].

In Malawi, pre-eclampsia and eclampsia are the fourth highest causes of maternal deaths. Even though there is paucity information on the incidence and prevalence rates, the mortality rate is estimated at 8% of all maternal deaths [5].

Institutional based mortality reports on pre-eclampsia and eclampsia in Malawi range from 4 % to 17 % of all maternal deaths [15; 45].

At Queen Elizabeth Central Hospital (QECH), one of the tertiary referral hospitals in the southern region of Malawi, deaths from pre-eclampsia and eclampsia almost doubled between 1999 and 2008 from 6.4 % to 12.5% [15; 16].

2.3. Pathophysiology

Until now, the cause of pre-eclampsia is still unknown; however several hypotheses have been developed over the years trying to explain what goes on in pre-eclampsia. These hypotheses include immunological factors and placentation factors.

2.3.1 Immunologic Factors in Pre-eclampsia

The first hypothesis states that there exists maternal intolerance to paternally derived placental and fetal antigens. This maternal-fetal immune maladaptation is characterized by defective cooperation between uterine natural killer (NK) cells and fetal human leukocyte antigen (HLA)-C, which results in histologic changes similar to those seen in acute graft rejection. It is hypothesized that the endothelial cell dysfunction that is characteristic of pre-eclampsia may be partially due to an extreme activation of leukocytes in the maternal circulation, and this is evidenced by an up regulation of type 1 helper T cells [41].

2.3.2 Placentation factors

During normal pregnancy, the villous cytotrophoblast invades into the inner third of the myometrium, causing the spiral arteries to lose their endothelium and most of their muscle fibers. These structural modifications are associated with functional alterations, such that spiral arteries become low resistance vessels, and thus less sensitive, or even insensitive, to vasoconstrictive substances. The reduced resistance in the spiral arteries greatly facilitates blood flow to the placenta compared with other areas of the uterus [8; 41].

In pre-eclampsia however, this process appears to be defective, leading to untransformed narrow thick blood vessels which in turn lead to hypo perfusion and ischemia of the placenta. The defective process in this case is attributed to the failure of cytotrophoblast cells to express the adhesion molecules necessary for normal remodeling of the maternal spiral arteries [8; 41]. The ischemic state of the placenta is believed to trigger a widespread activation/dysfunction of the maternal vascular endothelium which results in enhanced formation of endothelin, thromboxane, and superoxide, increased vascular sensitivity to angiotensin II, and decreased formation of vasodilators such as nitric oxide and prostacyclin. The endothelial abnormalities in turn cause hypertension by impairing renal function and increasing total peripheral resistance. [8; 41].

2.4. Screening and diagnosis of pre-eclampsia

Screening for pre-eclampsia is an ongoing process during prenatal, intrapartum and postpartum period and must actively be done by health care providers at all levels of care. The screening takes a form of observation, history taking to identify at risk women, blood pressure checking and laboratory tests.

2.4.1 Risk factors

Several factors are known to be associated with development of pre-eclampsia at antenatal booking and must always be taken into account at first contact with the pregnant woman. A systematic review of controlled cohort studies by Duckitt and Hurrington (2005); indicates that age, parity, previous pre-eclampsia, family history of pre-eclampsia, multiple pregnancy, pre-existing medical conditions such as Insulin Dependent Diabetes (IDDM) and chronic hypertension are associated with development of pre-eclampsia[46].

In their systematic review, Duckitt and Hurrington found that women aged 40 and above had almost twice the risk of developing pre-eclampsia, whether they were primiparous or multiparous, without controlling for other factor like pre-existing chronic disease such as hypertension or diabetes. The researchers reported that young age did not seem to affect the risk of developing pre-eclampsia, whichever cut off age was used [46].

On the contrary, Pal et al in 2011, in their cross sectional institution study to analyze the incidence of eclampsia, types of eclampsia, socio demographic characteristics of the subjects, mode of delivery, maternal and perinatal outcomes over a ten year period; and to evaluate the utility of different management protocols followed in the hospital to treat pregnancy with eclampsia at Burdwan tertiary teaching hospital, in Bangladesh, found that 6.97 % of the 5991 eclamptic patients that were admitted during this period were less than 20 years of age as opposed to 3.17 % who were above 35 years [20]. This might suggest young age to be strongly associated with pre-eclampsia and eclampsia in this particular study. This might also mean that all pregnant women are potentially at risk of developing these conditions; as such they must all be given the same attention. However, this was a finding from one cross sectional study, as opposed to the systematic review. Knowledge of risk factors is important for health care providers; in order for them to be able to identify women who may potentially be at risk of developing these conditions.

2.4.2 Detection and diagnosis of pre-eclampsia

The main form of detecting women with pre-eclampsia is through measurement of blood pressure at every antenatal visit, during labour and during postpartum. There is a great association between lack of antenatal care and development of severe pre-eclampsia and eclampsia. A study

done by Tukur et al, in 2010 to evaluate the effect of the introduction of magnesium sulphate for the management of eclamptic seizures on maternal and fetal indices at Aminu Kano Teaching Hospital [AKTH], in Nigeria, between 2005 and 2007, the researchers found that 87% of the 131 eclamptic patients were unbooked for antenatal care [17]. Similar findings were also reported by Liu et al, 2005, in their retrospective study comparing referral and non-referral hypertensive disorders during Pregnancy in an analysis of 271 cases at a tertiary hospital [47]. In this study researchers reported that 26% of the cases never received antenatal care and were significantly associated with severe pre-eclampsia, HELLP syndrome, low birth weight and low Apgar score as compared to those who attended antenatal care. This could be attributed to the fact that those women who received antenatal care had a chance of their high blood pressures being detected and treated at an early stage as opposed to those women who did not receive any antenatal care.

This makes it imperative for health care providers to check and monitor blood pressures of every pregnant woman during antenatal visits. This would help them to detect women with the condition at an early stage and to refer them for specialist antenatal care or to immediately intervene if patient already at specialist level of care.

Confirmation of diagnosis of pre-eclampsia is done through urine test for presence of protein (proteinuria). This test is done if blood pressure is found to be high and the gestation age is above 20 weeks [6, 13; 41]. Proteinuria in this case is defined as protein of 300 mg per day or more or 30 mg per mmol in a single 24 hour urine specimen or 1+ dipstick [6; 12; 41]. The test for urine protein can be done at all facility levels using simple protein dipsticks, which are specifically manufactured for this purpose and are user friendly [12; 13].

On the other hand, diagnosis at secondary and tertiary level facility may include the following laboratory tests depending on availability of those resources; a complete blood count with platelets, hepatic tests to identify potential HELLP syndrome; a blood smear to test for schistocytes; renal function tests to rule out acute renal failure or uremia e; 24-hour proteinuria; prothrombin, activated thrombin time, and fibrinogen (microangiopathic hemolytic anemia); blood group; and irregular antibody screening[6;41]. Sonography of the fetus is recommended

among at risk groups in order to detect any growth restriction that is usually observed in pre-eclampsia if the service is available [6; 41].

Knowledge of such laboratory tests is crucial because deviation entails severity of disease. It also helps physicians to differentiate pre-eclampsia from other forms of hypertension in pregnancy to ensure appropriate treatment.

2.4.3 Classification of pre-eclampsia

Pre-eclampsia can be classified as mild and severe [6; 12; 13].

- **Mild pre-eclampsia**

Preeclampsia is termed mild when a woman has two measures of diastolic blood pressure 90–110 mm Hg, 4 hours apart, after 20 weeks gestation and has proteinuria of up to 2+. Mild pre-eclampsia usually does not exhibit any symptoms [6; 11; 12; 13]. However, the danger is that it can progress to severe pre-eclampsia, then eclampsia within a short period of time [13]. As such, health care providers need to be alert when a woman presents with mild pre-eclampsia.

- **Severe pre-eclampsia**

Pre-eclampsia is said to be severe when a woman presents with a diastolic blood pressure of 110 mm Hg or more after 20 weeks gestation and has proteinuria of 3+ or more [13]. As opposed to mild pre-eclampsia, a woman with severe pre-eclampsia may present with persistent headache of an increasing frequency; and which is not relieved by regular analgesics; blurred vision, oliguria (passing less than 400 mL urine in 24 hours), epigastric pain, pulmonary edema and severe swelling of hands, face, or feet of sudden onset [6; 11; 12; 13]. Being aware and recognizing such signs and symptoms are crucial for prompt detection, better management and for good prognosis of patients. It is imperative therefore that all health care providers observe and be aware of these signs and symptoms in order to promptly and effectively manage women who present with severe pre-eclampsia.

- **Eclampsia**

Eclampsia is the major complication of pre-eclampsia, and is described as the occurrence of convulsions in the presence of pre-eclampsia and in the absence of other causes of convulsions

such as epilepsy [7]. The convulsions resemble tonic-clonic epileptic fits and reoccur in rapid sequence. They may occur regardless of severity of blood pressure and are difficult to predict because they can occur without warning signs such as headache or visual disturbances. A woman may remain in coma for a few minutes or hours following a convulsion [13]. Both pre-eclampsia and eclampsia may also occur after delivery. It is estimated that 25% of cases of eclampsia actually occur after delivery; therefore it is important that health care providers continue blood pressure monitoring on women after delivery [13]. Other complications of pre-eclampsia include pulmonary edema, renal failure, disseminated intravascular coagulation (DIC), placenta abruption; haemolysis elevated liver enzymes and low platelet count (HELLP) syndrome [12]. Complications for the baby may include preterm births, intrauterine growth restriction and deaths, which may be secondary to early termination of pregnancy due to severity of the condition [12].

2.5 Management of pre-eclampsia and eclampsia

Due to its gravity, management of pre-eclampsia and eclampsia is recommended to be done at a health facility with the capacity to deal with the complication [7; 11]. It is however, recommended that stabilization of patients be initiated at the first level of care before referral to the next level of care in order to increase patients' chance of survival [2; 48].

2.5.1 Prevention of pre-eclampsia

Prevention of pre-eclampsia is difficult due to lack of known cause. However, focus of prevention is on early detection of pre-eclampsia in order to prevent its progression to eclampsia. It is recommended therefore that close monitoring of both in hospital or outpatient be done [13]. Other strategies to prevent progression to eclampsia include use of antihypertensive therapy to keep maternal blood pressure to normal or safe ranges, timely delivery, and prophylactic use of magnesium sulphate during labour and in immediate postpartum in those considered to have severe pre-eclampsia[5; 49]. WHO also recommends supplementation of calcium at 1.5-2.0grams and aspirin 75mg per day during pregnancy for women at risk of developing pre-eclampsia [7]. Skilled attendants at birth are very important in order to monitor, detect and manage pre-eclampsia and eclampsia promptly before it progresses to a life threatening state [7; 49].

2.5.2 Treatment

The primary treatment of severe pre-eclampsia and eclampsia is delivery of the baby and placenta; however reduction of blood pressure with antihypertensive medicines, and prevention and control of convulsions with magnesium sulfate to stabilize the patient is essential before effecting delivery [7; 13]. The delivery of the baby is however determined by severity of the disease and the duration of pregnancy [13].

- **Control of blood pressure**

Following a systematic review of 17 Cochrane reviews and 2 systematic reviews by WHO steering group which included staff from WHO Departments of Reproductive Health and Research, Making Pregnancy safer, and Nutrition for Health and Development and two external experts, 2011; WHO recommends use of nifedipine, hydralazine, and labetalol for reduction of blood pressure in pre-eclampsia and eclampsia among other recommendations [7]. Authors of other clinical reviews have also recommended the same antihypertensive drugs [12; 41]. However, these drugs are only recommended for treatment of severe pre-eclampsia.

Mild pre-eclampsia on the other hand is managed expectantly by monitoring blood pressure and urine protein twice a week on outpatient basis if patient stays close to health facility and daily monitoring if patient is admitted [13]. Delivery is expedited if patient presents at 37 weeks gestation or regardless of gestation if condition worsens and is affecting the condition of the unborn baby [13]. On the other hand, delivery is recommended within 24 hours and 12 hours for severe pre-eclampsia and eclampsia respectively [13].

- **Prevention and control of convulsions**

Magnesium sulphate (MgSO_4) is a drug of choice for prevention and control of convulsions in pre-eclampsia and eclampsia [7]. In a Cochrane review of 15 randomized trials, which included 11,444 women, with an objective to assess the effects of MgSO_4 , and other anticonvulsants, for prevention of eclampsia, Duley et al, 2010, found that MgSO_4 halves the risk of eclampsia and that it probably reduces risk of maternal death. However, the authors found no clear difference in serious maternal morbidity and no clear difference in stillbirths or neonatal deaths [42].

In a hospital based prospective cross sectional study done in Assiut University Hospital, in Egypt, to evaluate the protocol used for management of eclampsia at this hospital, the researchers found that MgSO_4 was able to control convulsions in 98.1% of the 1998 eclamptic women who were recruited in the study from 1990 to 2010; and there was only 4% mortality [18]. These findings indicate a much higher efficacy of MgSO_4 than that reported by the Cochrane review above. However, the difference could be attributed to the differences in the characteristics of the subjects as well as study methodologies. The Cochrane review used randomized clinical trials and focused both on management of severe pre-eclampsia and eclampsia, while the Egypt study focused only on eclampsia and there were no controls. Nevertheless, both reports support the use of MgSO_4 for control of convulsions.

A similar study was done in south eastern Nigeria to determine the effect of introducing MgSO_4 on the maternal and perinatal outcomes of severe pre-eclampsia in Enugu, South eastern Nigeria. This was a retrospective study of all cases of severe pre-eclampsia managed at the University of Nigeria Teaching Hospital Enugu (UNTH), Nigeria, from 1 January 2005 to 31 December 2008 - 2 years before, and 2 years after the introduction of MgSO_4 . The researchers found that none of the patients in the MgSO_4 group had seizures after the commencement of the drug, while one woman from the diazepam group had an episode of tonic clonic seizures. Another interesting finding in this study was the reduced hospital stay among women who received MgSO_4 as opposed to those who got diazepam, 11% versus 35% respectively. As opposed to the Egypt study, there were no maternal deaths in either of the groups in this study. This however, might be attributed to the sample sizes in these two studies and also study designs. But, one thing is clear in both studies, the support for use of MgSO_4 . On the part of perinatal outcome, the researchers found that there was a tendency of low 1 minute Apgar score in babies born from women who received diazepam, but the difference was not significant [50].

There was limited information on qualitative studies on management of pre-eclampsia and eclampsia elsewhere; as such, studies that seemed close to this current study were reviewed.

A study was done by Hassan-Bitar and Wick in 2006; to assess the quality of maternity care in a large Palestinian referral hospital, as a first step in developing interventions to improve childbirth care for mothers and newborns. The study used both quantitative and qualitative methods for data

collection. Data was collected using observations, semi-structured interviews and, in-depth interviews with 31 maternity care providers working at the hospital [23]. This was complemented with informal discussions with health care providers, cleaners, secretaries, clerks, administrators, managers and women to confirm the observed practice. The researchers conducted semi-structured interviews with all women who gave birth at the hospital regardless of the mode of delivery to learn about their birth experience and their interactions with care providers as well as their experience with postnatal care. The results indicated that there was a great degree of suboptimal childbirth care which was attributed to severe understaffing of midwives, insufficient supervision, and lack of skills, stressful environment, financial insecurity, insufficient supplies and poor attitudes.

Another similar study was a qualitative study that was done in Tanzania by Manongi et al in 2004 to explore the experiences of health workers working in the primary health care facilities in Kilimanjaro Region, Tanzania, in terms of their motivation to work, satisfaction and frustration, and to identify areas for sustainable improvement to the services they provide[22]. The study was done in three districts of Tanzania focusing on staff working in government primary health centres. Six focus group discussions were conducted to collect data with the aid of a semi-structured interview guide that was developed following a pilot study. The participants in the focus groups included nurses and clinicians and the discussions were conducted separately. Two focus group discussions were conducted in each district. Participants in the study were randomly selected from a health worker list from dispensaries and health centres [22].

Findings indicated that the health care providers lacked supportive supervision, feedback from the referral facility, performance appraisal, career development and transparent promotion. They also expressed need for inter-facility exchange for commonly referred conditions in order to improve their provision of care [22]. Despite the fact that these two studies did not specifically look at management of pre-eclampsia and eclampsia, they both focused at health care providers though at different facility levels. The methods therefore were useful in the designing of this study.

2.6 Management of pre-eclampsia in Malawi

Malawi was one of the countries which participated in a double blinded randomized placebo clinical trial called Magpie between 1998 and 2001. The aim of the study was to determine whether women with pre-eclampsia and their babies benefit from the use of MgSo₄. There were 10141 women who were randomized in this trial. The results indicated that MgSo₄ halves the risk of eclampsia, and probably reduces the risk of maternal death. The results also indicated that there did not appear to be substantive harmful effects to mother or baby in the short term [51]. Despite this fact, there was scarcity of other studies done in Malawi to specifically follow up on the Magpie trial or any study focusing on the management of preeclampsia; except for a study that was done at Bwaila referral hospital in the central region of Malawi. The study was done to evaluate the effect of monitoring and treatment charts on the management of eclampsia at this hospital. The researchers introduced a monitoring and treatment chart for patients with eclampsia in 2006. They compared charts of patients managed in 2005 before introduction of charts (n=89) and of patients managed in 2007 after introduction of the charts (n=75). The researchers found that there was improved care which might also have reduced caesarean sections from 87% to 33% as more women underwent induction after stabilization [21].

However, Malawi follows the WHO guideline for the management of pre-eclampsia and eclampsia which was introduced in the country in 2004 [21]; as such it recommends use of MgSo₄ and antihypertensive drugs in the management of preeclampsia and eclampsia. All cases of pre-eclampsia and eclampsia are managed at secondary and tertiary levels, in this study at QECH referral hospital; however there is a big role that the first level facilities play before the patients are referred to the hospital [7; 13].

2.6.1 The role of first-level facilities in the management of pre-eclampsia and eclampsia

First levels are entry points to the formal health care delivery system; as such they are crucial to the survival of women with complications of pregnancy like pre-eclampsia and eclampsia. In Malawi, the management of pre-eclampsia and eclampsia at this level is based on WHO's best practice guidelines for midwives at first level facility and according to guidelines for managing complications in pregnancy and childbirth[11; 13].

- **Problem detection**

The first responsibility of health care providers at the first level facility is to be able to detect women who present with the condition. This can be achieved by screening all pregnant women at every antenatal visit. The screening involves history taking on the first visit and blood pressure check on every antenatal visit. Checking and comparing previous and present blood pressure readings to identify any elevations; and also checking on rapid excessive weight gains in women occurring within a short period of time. If the blood pressure reading is high, the woman needs to be given some time to rest before a recheck of the blood pressure. This helps to rule out other factors that might elevate the blood pressure. Danger signs like headache, blurred vision and epigastric pain must be rule out by asking the woman. The health care provider is also supposed to check urine protein using protein dipsticks to confirm diagnosis [11].

- **Classification and Management**

The second responsibility is to classify the blood pressure according to severity. If patient is found with mild pre-eclampsia, the patient is supposed to be counseled on the change of birth plan in terms of place of delivery, and must be referred to the hospital [11].

If the woman is diagnosed with severe pre-eclampsia, she is supposed to be given a loading dose MgSo4. She must also receive appropriate antihypertensive drugs if diastolic is above 110mmHg, and refer to the hospital urgently [11].

Blood pressure readings of diastolic 90mmHg and above with no protein in urine are grouped as hypertension. As such the woman must be advised on reduced workload and rest. The woman must also be told to immediately seek medical care if she observes any of the following danger signs; severe headache, blurred vision and epigastric pains. The woman needs to be reviewed after a week and if blood pressure still persists refer to hospital [11].

- **Eclampsia**

Eclampsia regardless of level of facility must be treated as an emergency. Guidelines on essential practice and on managing complications of pregnancy and childbirth[11], which are also similar to guidelines for basic maternal and newborn care by JIEPGO [11; 13; 48], recommend that patients presenting with severe pre-eclampsia and eclampsia must be stabilized according to the

gold standard for management of these conditions[Appendix I]. It is imperative therefore that health care providers at the first level facility be conversant with these guidelines in order to efficiently managed patients with severe pre-eclampsia and eclampsia.

2.7 Complications of pre-eclampsia and eclampsia

Apart from eclampsia which has already been described in the above sections, pre-eclampsia may also complicate to into stroke, renal failure, pulmonary oedema, haemolysis, elevated liver enzymes, and low platelets (HELLP syndrome), and disseminated intravascular coagulopathy (DIC) [12;13]. Complications for the baby may include preterm births, intrauterine growth restriction and deaths, which may be secondary to early termination of pregnancy due to severity of the condition[12].

In summary, this literature review has helped the researcher to understand what other studies have done in relation to the current study. It has been observed from the literature review that eclampsia is one of killers in childbirth. It has also been observed that due to lack of known cause of pre-eclampsia prevention is difficult; hence efforts must be directed towards prevention of its progression to eclampsia in order to prevent deaths. However, the studies in this literature review were quantitative and concentrated much on secondary and tertiary level facilities of care, creating a transitional care gap between the first level facility and the other levels. Except for a few studies, focus of the studies on pre-eclampsia and eclampsia has been on the treatment of the patients other than the providers of the treatment themselves, which in this case are the health care providers. Therefore, there is need for studies to be done at the first level facilities in order to link management of patients with pre-eclampsia and eclampsia between the two facility levels, thereby improving outcome of patients; hence the purpose for the current study.

2.8 Conceptual framework of this study

It has emerged from the preceding literature that management of pre-eclampsia and eclampsia depends on health workers having the correct knowledge about these conditions. They need to recognize and diagnose the conditions early enough and provide the first level tests and treatments. Since eclampsia can be fatal, health workers are expected to refer such patients to a hospital immediately. This process requires that patients arrive at the health centre in good time and health workers make correct judgment about the conditions. Finally, the first level health

services must be in line with the expectations and treatment thereafter at the referral hospital. In other words, the health workers at the health centres need to be supervised by those in hospitals and also they should get the correct feedback on the type and quality of first level services they are providing to patients so that they can improve.

The first level health services also depend on the availability of equipment for diagnosing the conditions and the drugs for containing the conditions. Life is also saved if the referral is made effectively and efficiently without delay and with all the support the patients would require. This conceptual framework can be illustrated as in Figure2.

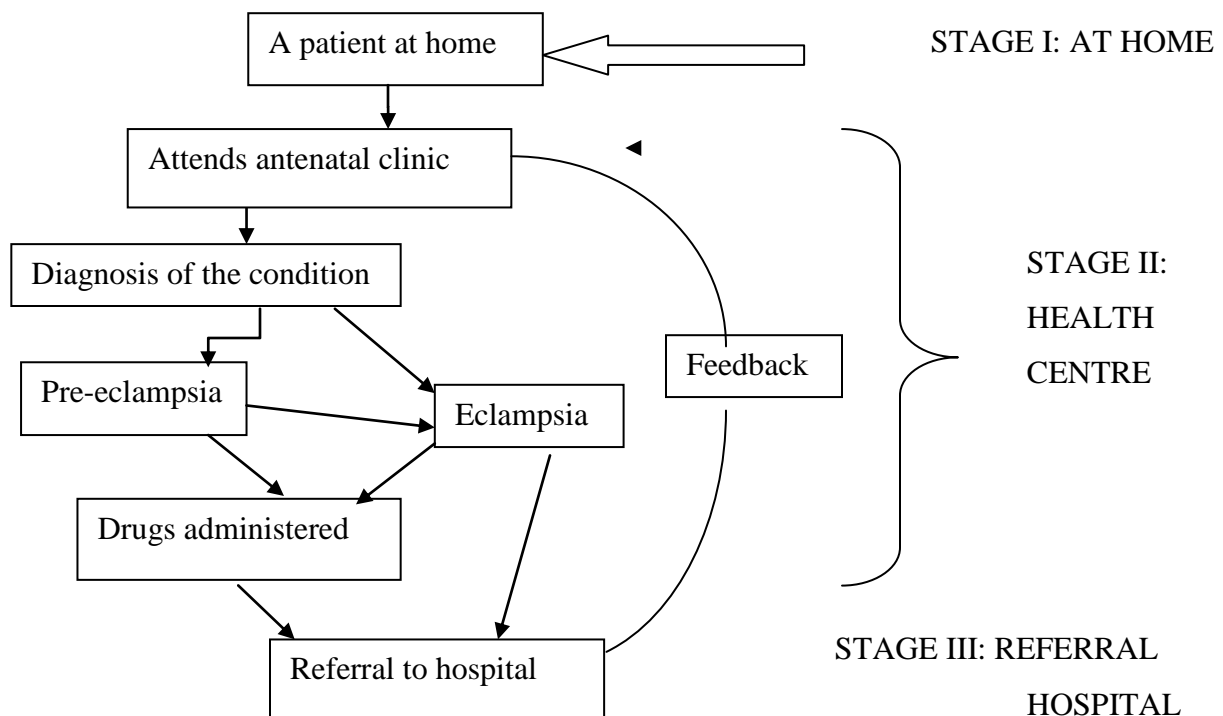


Figure 2: framework for managing pre-eclampsia and eclampsia conditions

Figure 2 brings to the surface important concepts which will be the focus of this study. These include knowledge of pre-eclampsia and eclampsia, procedure for assessing the conditions, how to manage the two conditions and referral process of patients presenting with these conditions.

The conceptual framework is also based on the fact that pre-eclampsia and eclampsia management skills are essentially those abilities that help to ease the complications arising from

pregnancy and competence in health care providers as they face the realities of life. Management skills are also regarded as professional skills required by all health workers at all levels to function confidently and competently with themselves, with other professional and with the patients.

From the literature reviewed in this study, management skills have been categorized into five broad areas:

Stage I: at home

1. the patient understanding of the need to seek health care during pregnancy, also for condition and showing up at the health centre for help: these include knowledge and beliefs about pregnancy related conditions within the cultural context

Stage II: at the first level care

2. The skills of knowing and identifying the pre-eclampsia and eclampsia patients. These include signs and symptoms of the conditions
3. The skills of diagnosing, treating and controlling the conditions; these include: conducting test and administering drugs to avoid convulsing and to stabilize the situation
4. The skills of arranging for referral to hospital include: stabilizing the patient, arranging for transport, and escorting the patient,

Stage III: at the referral hospital

5. The skills of pre-eclampsia and eclampsia patients by the health workers at the referral hospital including feedback

The management skills can be utilized in prevention of pregnancy complications and thus improving safe motherhood. Therefore for the purpose of this study; the management is used to refer to both professional and practical use of knowledge and resources by the health workers at the first level and referral hospital. These could be demonstrated by the methods used in identifying, testing, treating and referring patients with pre-eclampsia and eclampsia. Applications of management skills at various levels of health care provision by the health

workers at both first level and referral level indicates their awareness of the criticality of pre-eclampsia and eclampsia.

The factors that could affect the management of pre-eclampsia and eclampsia will be explored through the following themes: (a) the professional knowledge and practices of health workers demonstrated in the management of patients with pre-eclampsia and eclampsia; (b) the treatment of severe conditions; (c) the referral process; (d) supervision and feedback from the superiors and referral hospitals.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents a detailed process of methods used in data collection. A detailed explanation of data analysis is also presented. The sections in this chapter include study design, study setting, data collection, data analysis, trustworthiness, dissemination and ethical consideration.

3.1 Design

This is a qualitative in which the researcher used review of records, semi- structured interviews, focus group discussion and participant observation to collect data. Qualitative research is a form of social enquiry that focuses on the way people interpret and make sense of their experience and the world in which they live. It seeks to understand a given research problem or topic from the perspectives of the population it involves [52; 53]. As opposed to a quantitative approach which commonly uses rigid and structured methods such as questionnaires, surveys, structured observations and closed questions with predetermined answers, qualitative methods are flexible. Use of open-ended questions in semi-structured interviews and focus group discussion allows full expressions to be given by the respondent; in other words the participant assumes the expert position [53]. In this study, a qualitative approach was used to allow healthcare providers to express their views and experiences as observed and lived in their daily life world. It gave them a chance to reflect on what they do in their natural world when they receive a patient with pre-eclampsia and eclampsia; other than assuming and limiting them to preset answers as is commonly done in quantitative methods.

In this study within method and data triangulation were used. Triangulation is the process by which several methods such as data sources, theories, or researchers are used in the study of one phenomenon [54]. Within or intra-method triangulation uses different strategies to collect data but stays within a single paradigm [52; 54]. This study used semi-structured interviews, non-observation, and focus group discussions in its methods triangulation. Data triangulation uses

multiple data sources based on time, space and person with similar foci to obtain diverse views about a topic for the purpose of validation and completeness [52; 54]. In the current study space and person triangulation were used. To triangulate for space, eleven different health centres and one referral hospital were included in the study. Concurrently different cadres and professions like registered nurses, nurse midwife technicians, clinical officers, medical assistants and patients participated in this study. Using different types of triangulation in this study helped the researcher gain a deeper understanding of the phenomenon and also to have a broader scope of the context in which patients with pre-eclampsia and eclampsia are managed [54]. It also helped the researcher to develop confidence in the data that were collected. Focus group discussions were used to confirm and validate data obtained from the individual interviews.

3.2 Setting

3.2.1 Blantyre

The study was conducted in Blantyre District, the commercial capital city of Malawi in the southern region. Blantyre district has a population of 1,001,984. Out of this population, 661,256 live in the city. Females contribute to 500, 984 of the population and women in the reproductive age group (15-49) contribute to 265,912 of the female population [55].

Blantyre District does not have a district hospital; hence health centres refer patients directly to the tertiary hospital which in this case is Queen Elizabeth Central Hospital (QECH). This study was therefore conducted at QECH and in health centres that refer patients to QECH's maternity unit Chatinkha. Chatinkha maternity unit was chosen because it is where obstetric complications including pre-eclampsia and eclampsia are managed and it is also situated within reach to the residential area for the researcher as such it proved convenient in terms of cost and accessibility to the facility.

Chatinkha maternity unit has a total of 250 beds for both obstetrics and gynecological patients. It conducts approximately 7000 deliveries per year and 17% of these deliveries are complicated with pre-eclampsia and 4% develop eclampsia. The maternity unit sees over 2000 new gynecological patients in its outpatient clinic. Apart from clinical activities, Chatinkha acts as a teaching and training unit for students from its surrounding colleges including University of

Malawi College of Medicine and Kamuzu College of Nursing, Malawi College of Health Sciences, Trinity and St Joseph Colleges of Nursing.

At Chatinkha maternity unit, the study was conducted in the labour ward and at the postnatal ward. Labour ward is the place where all patients referred with severe pre-eclampsia and eclampsia are admitted and managed. On average Chatinkha labour ward conducts more than 20 deliveries per day. The postnatal ward, on the other hand is where the patients from labour ward or operating theatre are transferred when they have delivered their babies and are out of danger. Discharge from the hospital is also done from this ward. The two wards were basically chosen in order to get easy access to the health care providers, records and patients with pre-eclampsia and eclampsia.

There are two postnatal wards at Chatinkha maternity unit with 50 beds each; however during the study period only one ward was operating due to some renovations that were going on. Routine activities in the ward include postnatal checkups before discharged, wound dressing, doctors' rounds, monitoring of patients with complications like pre-eclampsia and eclampsia when they are out of danger, drug administration and post-operative care for caesarean section patients. Rooming in is only 12 hours for women with uncomplicated normal deliveries due to limited space.

3.2.2 Health centres

There are a total of 22 health centres that refer to Chatinkha Maternity Unit. The farthest health centre being located 75km away (Figure 3). Regardless of the distance and the geographical locations, all these centres provide reproductive health services, besides other general health services. In this study 11purposively selected health centres were included.

A typical health centre in Malawi has a total of 12 maternity beds; two delivery beds, and 10 post natal beds[BDHO local report].The postnatal beds are used for both rooming in for postnatal mothers and for antenatal mothers who are in latent phase of labour or are waiting for referral to the central hospital. Normally rooming in is 24 hours, unless there is a problem requiring further observations.

Staffing at the health centre includes nurse midwife technicians, enrolled nurse midwives, clinical officers and medical assistants. All these cadres except for medical assistants undergo a 3 year similar training program which prepares them to perform as skilled birth attendants [36].

The number of skilled health care providers in these health centres varies with location; ranging from as low as one health care provider to as many as 19 health care providers; with urban health centres having more staff than the rural. The catchment areas for the health centres also varies, from 9000 to 148000, with urban health centres having wider catchment areas than their rural counterparts [55].

Services offered at these health centres include antenatal care, normal delivery and post natal care, family planning, under-five clinics, Voluntary counseling and testing for HIV, Antiretroviral treatment clinics. On an average antenatal booking day urban health centres attend to over a 100 new clients, and conduct 5 deliveries per day. On the other hand, rural health centres attend to 20 new antenatal clients per booking day and conducts 3 deliveries per day on average.

Semi-structured interviews and a focus group discussion were conducted with health care providers in 11 purposively selected health centres which had referred patients with pre-eclampsia and eclampsia to Chatinkha maternity unit from 1st September to 31st December 2012. Purposive sampling implies deliberative selection of participants, sites, documents or visual materials that best help the researcher to understand the problem and answer the research question [52; 53]. In this study the sites were chosen basing on the interrelationship between the two facility levels and the condition under study. The health centres are an entry point of patients with pre-eclampsia and eclampsia to the formal health care delivery system; as such any management offered to these patients at this facility has an implication on patients' outcome at the referral facility; which in this case is Chatinkha maternity Unit, of QECH

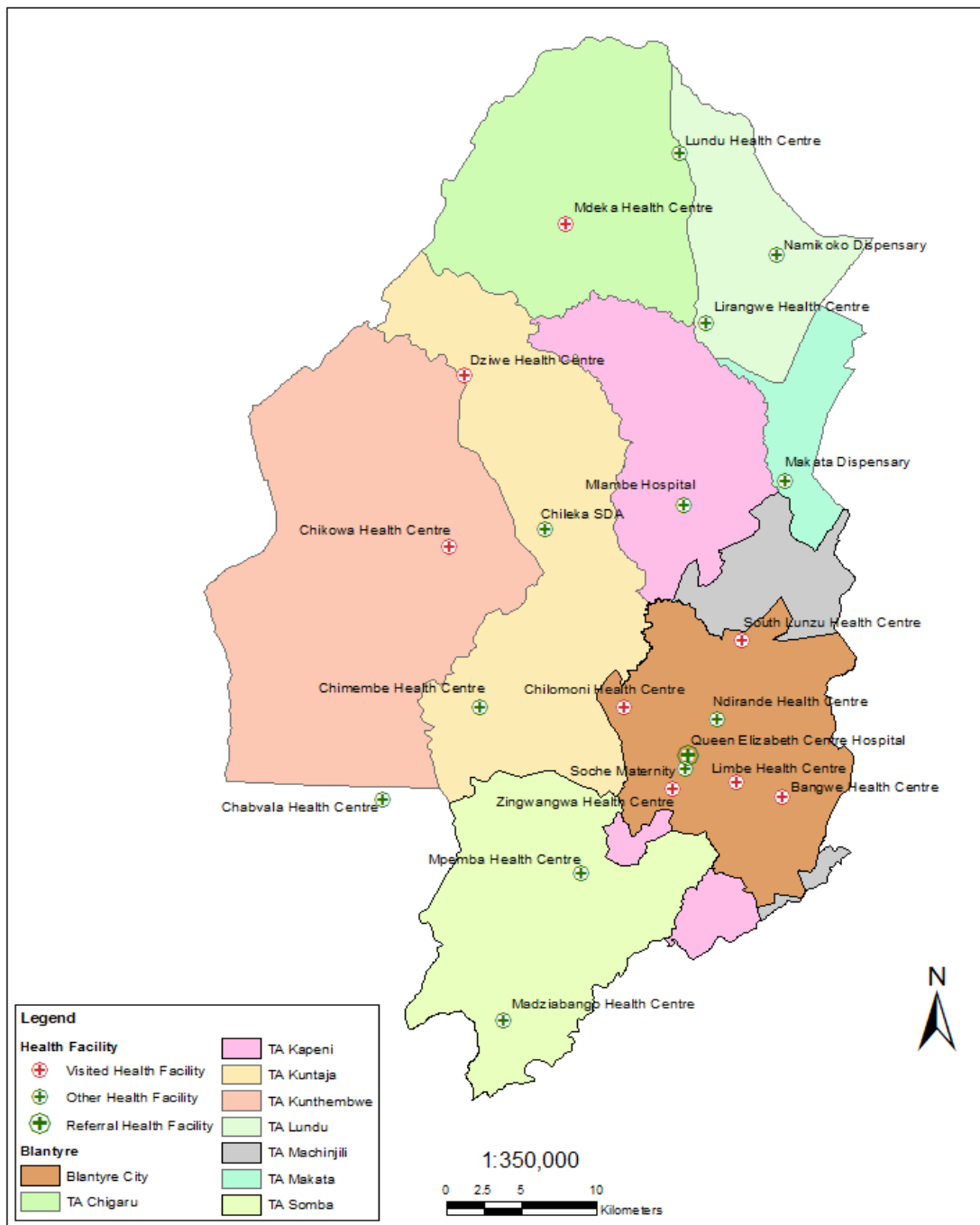


Figure 3: Map of Blantyre indicating health centres

3.2.3 Selection of health centres

Selection of health centres was based on patients referred from health centres. With consent from the in-charge of Chatinkha labour ward in addition to consent by COMREC, the researcher checked admission registers on a daily basis for new patients referred from the surrounding health centres. The register contains patients' information about name, age, from where they had been referred and the reason for referral. Only patients who had been referred due to pre-eclampsia and eclampsia were included into the study. These patients were then approached for consent to participate in the study and to review their records. Since the setting at Chatinkha labour ward is such that patients with pre-eclampsia and eclampsia are nursed in an intensive care unit within the ward; it was easy for the researcher to identify them. After obtaining a verbal and written consent from the patient, she was asked from where she was referred in order to confirm if she had been referred from another facility and about the care she received before referral. The health centre from where she had been referred was noted and purposely sampled as a participating centre. A day or two after an interview with an eligible patient, the researcher made a follow up visit to that respective health centre and if available interviewed the healthcare providers who took part in referring the patient, and those who usually take part in the management of pre-eclampsia and eclampsia even if they did not send this particular patient. Immediate follow up to the health centres was done to take advantage of their short lived experience in order to minimize recall bias owing to the fact that the conditions in question are considered rare. However, not all health centres that referred patients with pre-eclampsia and eclampsia during the study period were included in the study due to cost and time constraints since all activities were done by the researcher herself.

3.3 Study population

Two groups of people were targeted in this study. The first group was of healthcare providers working at a health centre that refers patients to Chatinkha maternity unit of QECH and who would have referred a patient with pre-eclampsia or eclampsia during the study period. This group included clinical officers, enrolled nurse midwives, nurse midwife technicians and medical assistants. These profession cadres have different pre-service training as well as qualifications as

follows: registered nurses have four years pre-service training and possess degrees, nurse midwives technicians and enrolled nurse midwives have three years pre-service training and have certificates; clinical officers have four years pre-service training and have diplomas and lastly medical assistants are clinicians with two years pre-service training and they also possess certificates. Use of different cadres with different pre-service training helped to have diverse degrees of the participants' understand of the two conditions under study. The second target within the same group was healthcare providers at Chatinkha maternity Unit who admitted a patient referred from these health centres. Healthcare providers at Chatinkha included registered nurse midwives, enrolled nurse midwives and nurse midwife technicians.

The third target group was women who had been referred due to pre-eclampsia and eclampsia from a health centre. These were included because they helped to link the information obtained from health care providers from the two levels of care.

Inclusion criteria

- Skilled birth attendants from participating health centres. They included nurse/midwives, nurse midwife technicians, clinical officers and Medical Assistants only when it was learnt that they participate in maternity care
- Nurse/midwives working from Chatinkha labour ward who had admitted a referred patient with pre-eclampsia and eclampsia from a health centre
- Mothers who had been referred due to pre-eclampsia and eclampsia from the health centres

Exclusion criteria

- Patients of pre-eclampsia and eclampsia who attended antenatal care at Chatinkha, because they were already under specialist care at Chatinkha
- Student nurse midwives and student doctors were excluded because they were still learning and they were not allowed to deal independently with obstetric complications

3.4. Sampling

Purposive sampling of nurse midwives, clinical officers and medical assistants in purposively selected health centres was done. At least one semi-structured interview was conducted with whichever cadres who had participated in the management of the patients in question, were available, and consented to the interview. This helped the researcher to reach all cadres that were involved in the management of complications of pregnancy at the first level of care; and it also helped her to get diverse perspectives, experiences and views from the different cadres at this level. Semi-structured interviews were also conducted with healthcare providers at Chatinkha maternity unit labour ward. These healthcare providers were included in the study because they were the ones who attended to the referred patients who had pre-eclampsia and eclampsia. As such they were key to information on the patients' conditions on arrival to the referral hospital. One focus group discussion (FGD) was conducted with the participating midwives from the different health centres to complement the data collected from the individual interviews. No FGD was conducted with clinical officers or medical assistants because there were basically no clinical officers in most of the health centres and where they were available, there was only one per health centre, so asking him to participate in a FGD would have disrupted the normal functioning of the health centre which is unethical. Moreover, being few in number, they would not form an adequate group for a focused discussion [52]. The type of participants in this study were chosen in order to target the people that make and carry out decisions about patients' care in the health centres and this fact made them better and right informants. All the cadres at these health centres except for medical assistants are trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns [36]. Medical assistants were included in this study where it was clearly indicated that they participated in management of maternity complications at the health centre including pre-eclampsia and eclampsia.

Semi-structured interviews were also conducted with patients who had been referred from the health centres with pre-eclampsia and eclampsia in order to link the information obtained from healthcare providers at the health centres, thereby increasing understanding of issues surrounding the conditions from different angles.

3.5 Data Collection

Data collection started on 9th of September through 31st December, 2012. Data were collected through review of patients' records, non-participant observation, one-on-one semi-structured interview and a focus group discussion using a structured interview guide that was developed based on the research questions. The interview guide had basically open-ended questions.

3.5.1 Review of case notes

The researcher did a review of all case notes of patients who were admitted with pre-eclampsia and eclampsia during the study period to determine the burden of pre-eclampsia and eclampsia at Chatinkha maternity unit and to determine how many were referral from health centres. This aided the researcher to identify health centres that were included in the study. It also helped to identify patients and health care providers at Chatinkha maternity unit to be included in the study.

3.5. 2 semi-structured individual interviews with patients

With the aid of an interview guide (Appendix II), the researcher conducted six one-one semi-structured interviews with four patients and two guardians of patients referred from the health centres with severe pre-eclampsia and eclampsia in the first month of study. The guardians were involved because the condition of their patient could not allow her to talk or remember what really happened at the health centre, secondary to convulsions. The interviews were done to link information obtained from health care providers at the health centres, and at Chatinkha Maternity Unit, thereby increasing the general understanding of the issues surrounding these conditions. Only a few patients were interviewed since the main aim of including them was to identify health centres to be included in the study and not to assess quality of care from their point of view. Patients were asked questions pertaining to their ability to recognize pre-eclampsia and eclampsia, like what symptoms made them seek medical help, how they were received and treated at health centre and how they were referred to Chatinkha maternity unit. These interviews lasted 20 minutes on average. In addition to the six interviews, with the consent of the labour

ward in-charge two records of dead women were also reviewed as a pre-requisite to selection of health centres to be included in the study. All interviews were conducted in local language.

3.5.3 Semi-structured interviews with health care providers

Semi-structured interviews were carried out with 8 purposively selected healthcare providers at Chatinkha maternity Unit and 21 healthcare providers participating health centres using different interview guides which were developed prior to data collection.

3.5.3.1 Semi-structured individual interviews at health centres

Semi-structured interviews were carried out with 21 purposively selected health care providers in purposively selected health centres after a thorough explanation of the purpose of the study and after obtaining a written consent form. Semi-structured interviews were conducted with a fairly open framework which allow for focused, conversational, two-way communication. The majority of questions were created during the interview, allowing both the researcher and the interviewee the flexibility to probe for details or discuss issues [52]. These interviews were conducted using an interview guide which was developed prior to onset of data collection (Appendix III). The interview guide changed depending on new issues arising from preceding interviews with health care providers. The interviews were conducted by the researcher herself and they lasted between 35 to 50 minutes, depending on the responses of the participant. All the interviews were conducted at the participant's work place in a private room which was identified by the participant her or himself. Conducting interviews at their own place was less intimidating for the participants due to the familiarity of their environment. It also helped to emphasize the fact that they were the experts and in control of the interviews at that moment in time. The interviews were conducted outside working hours which included at lunch time or after work to avoid disrupting their work routines. This helped to create a relaxed environment that would otherwise be lacking if one had to rush to attend to patients.

3.5.3.2 Semi-structured individual interviews at QECH (referral facility)

With the aid of an interview guide the researcher conducted semi-structured interviews with nurse midwives at Chatinkha Maternity Unit of QECH who had admitted a patient with pre-eclampsia and eclampsia during the study period. Participants were identified through patients' records, and they were invited to participate in the study after a thorough explanation of the purpose of the study. The interviews were conducted in a private nurses' office which was offered by the in-charge. These interviews lasted 20 minutes on average. A different interview guide was used at this level of care. Among other things health care providers were asked to explain the condition of the patient on arrival to Chatinkha and why they thought the patient arrived in that state (Appendix IV).

3.5.4 Focus group discussion

One focus group discussion was conducted with 6 midwives from the purposively selected health centres. An invitation to participate in the focus group discussion was made at the end of the individual interviews. Nine health care providers were invited to participate. Two refused to participate because of distance and difficulties with transportation; one health care provider could not make it on the date of interview. However, literature on FGD indicates that participant size of between 6 and 10 is adequate with the ideal size being between 5 and 10 participants [58]. Therefore, the size in the FG for this study was appropriate and acceptable. A focus group discussion is a qualitative method that helps to investigate a range of opinions or practices or normative aspect of behaviour [53]. In this study, a focus group discussion helped to investigate the normal practices and challenges among the different health centres concerning the management of patients with pre-eclampsia and eclampsia; and it also enriched and complemented the individual interviews. The focus group discussion was conducted at the college of medicine obstetrics teaching annex which was considered to be a neutral place for all the participants in this focus group. Choice of a neutral place in this case helped to minimize a feeling of being a host to colleagues which could otherwise have arisen if one health centre was chosen for the discussion, which could be psychologically challenging for the hosting participant [52; 53].

The focus group discussion was facilitated by the researcher herself and notes were taken by a research assistant who was previously trained for that purpose. A guide that was used for the

focus group discussion was developed from issues that arose from the different individual interviews (Appendix V). The FGD took a total of two hours.

Both the individual interviews and focus group discussions were conducted in the local language (Chichewa) (Appendix VI-VIII) which allowed for free and full expressions of respondents' experiences. Open-ended questions were asked on health care providers' experiences with diagnosis, management, challenges and opinions for improvement of the management of patients with pre-eclampsia and eclampsia.

All the individual interviews and the focus group discussions were digital audio tape recorded to minimise time and to ensure completeness of the data collected. However, this was done with participants' consent.

3.5.5 Inventory and observation

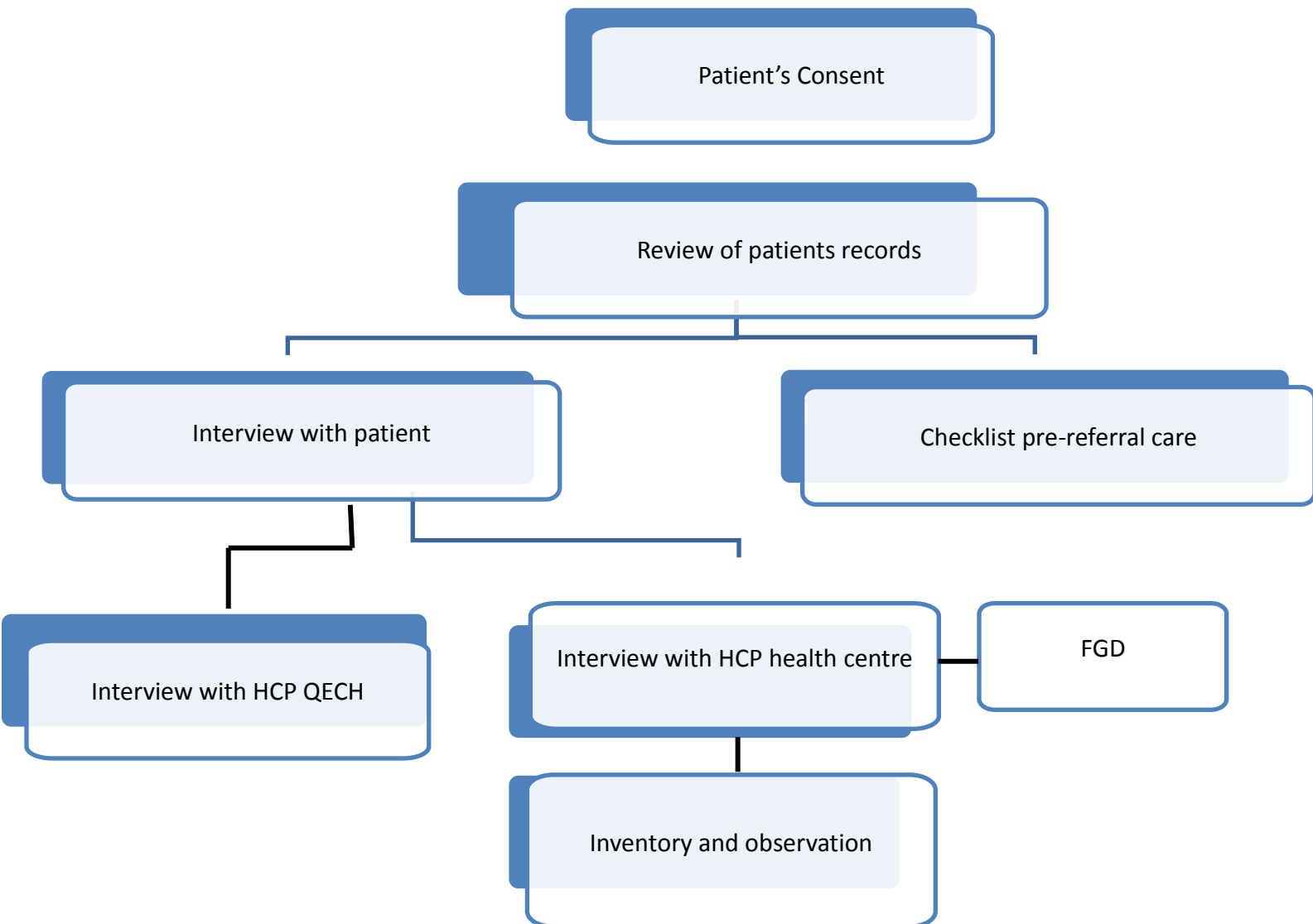
An inventory of resource availability was performed in the selected health centres using a focused checklist. This was done to triangulate and complement the individual interviews and focus group discussion findings. The checklist included a blood pressure measuring machine, stethoscope, intravenous fluids, magnesium sulphate, hydralazine, protein dipsticks, and Oxygen syringes, bladder catheters and urine collection bags, thermometers (Table 4). All these supplies are essential in the management of pre-eclampsia and eclampsia.

The researcher also did non-participant observation in the purposively selected health centres to determine how identification of patients with pre-eclampsia was done by health care providers in these health centres; that is whether mothers are educated on danger signs of preeclampsia and whether blood pressure check was done on antenatal mothers or not. Covert non-participant observation was done in this study as opposed to participant observation, to minimize researcher influence on participant behaviour and to minimize undue inducement that could arise from actively getting involved in participants' life world [53]. Since there were only two things that the researcher intended to observe in relation to the management of pre-eclampsia, she did not develop any checklist; observations were just tallied.

3.5.6 Pre-testing of data collection tool

Three pilot individual interviews were conducted with midwives at one of the health centres not included in the study. The pre-testing helped to test for the comprehensibility, acceptability and interpretation of certain words by respondents, the length of time required per interview, and interview conditions the researcher could have potentially faced, which could have disrupted the recording or flow of the interview [52]. Following the pre-testing some questions were rephrased to make them more comprehensible for the participants. Evaluation of the interview guide was on-going depending on new issues emerging from preceding interviews in order to explore such issues in the subsequent interviews. Due to financial limitations, no pre-testing was done for the interview guide for health care providers at the referral facility, since it required travelling to a district hospital. As such some changes were on going based on proceeding interviews.

Summary of data collection process



3.5.7 Management and Analysis of data

- **Data analysis process**

The initial data analysis started simultaneously with data collection in the field. Digital audio recorded individual interviews as well as the focus group discussion were uploaded on a password secured computer on the same day of the interview to prepare them ready for transcription and protect participants' confidentiality. The researcher transcribed them verbatim in local language immediately following the interview. This helped the researcher to continuously evaluate the data for new emerging themes which were then explored in the subsequent interviews and observations. The transcribed transcripts were translated into English by the researcher and a fourth year medical student to control for researcher biased translation.

- **Focused data analysis**

A systematic and focused data analysis was done following the completion of data collection period. An inductive general approach of analysis as described by Thomas, 2003 was used. In general, the inductive approach data analysis is determined by both research objectives (deductive) and multiple readings and interpretations of the raw data [56].

The first step in this process was organization of the raw data. Transcripts were grouped according to different sources, different sites, different levels of facility and different data collection methods. The entire data set was read through, redundant sentences were removed, typo errors and spelling mistakes were corrected in order to clean up the data. This was followed by further reading and rereading of the text to become familiarized with the data and to gain an understanding of common themes that were emerging from the text. The meaningful segments

from the text were then marked with different font colours to symbolize different themes and a label was assigned at the end of the text to signify that particular text. This process is called open coding [56]. This process was continued until all transcripts from the two different levels were completed. The initial labels in the text were written down separately to keep record of the original code list. Notes were made simultaneously to reflect what was coming up in relation to the research questions and objectives. Some of the transcripts were given to two other final year students; one master degree student and one PHD student to read and to independently come up with code lists of their own. Similarities and differences were noted on the two code lists and were discussed with the other student researchers. The merged list was then systematically applied to the whole data set; repeated codes were eliminated or merged. New codes were added to the list simultaneously. The subthemes were then merged and grouped into main categories. The codes were then grouped into sub-themes and main categories according to their relationships (Appendix.

Descriptive data analysis for patient characteristics, health care provider characteristics, pre-referral care checklist and resource availability checklist was performed using SPSS version 20.

3.6 Trustworthiness

Trustworthiness is the extent to which the findings are an authentic reflection of the personal or lived experiences of the phenomenon under investigation [52]. It is a way of ensuring and increasing confidence that the study findings represent the meaning by the study participants [52]. Trustworthiness of a study is important to evaluating its worth. There are four criteria that are used to evaluate trustworthiness of a qualitative study. These include credibility, dependability, confirmability and transferability [52].

- **Credibility**

In qualitative research credibility means the findings are believable and trustworthy from the perspective of a participant or subject in the research itself [52]. It is a way of demonstrating that the research was designed to maximize the accuracy of identifying and describing whatever phenomenon is being studied. In this study three methods were used to enhance credibility. These include triangulation in data collection, and peer debriefing. The current study sought to explore

and understand the perspectives of first level health care providers on the management of pre-eclampsia and eclampsia before referring for specialist care at the tertiary level. Due to its exploratory nature as well as the desire to create an environment for free expression of views by participants, a qualitative method was deemed a good fit for the purpose of the study than quantitative methods which commonly deal with quantifications [53].

Data collection was triangulated at three levels; methods, place and person. Triangulation of methods included individual interviews, focus group discussion and observation. Acknowledging that these methods individually have their own limitations, triangulation in this study helped to exploit individual method benefits and to compensate for the individual limitations. Triangulations also helped to link data and determine commonalities in issues that emerged from all methods as well as both levels of care. No major differences in information obtained from individual interviews from different places and from FGD, and the observations corroborated information from individual interviews and focus group discussion. Both individual and focus group discussion were done by the researcher who is conversant with the local language and culture of the study setting. The use of local language helped to probe and elicits deep clarifications from the participants, which would otherwise be difficult to obtain in a second language like English. Translation of the transcripts for this study was done by two independent people; the researcher and fourth year medical student. The transcripts were compared for any differences. Apart from differences in the vocabulary, the same themes emerged from the two sets of the transcripts. This was done to control for potential researcher bias. Determination of themes was also done by the researcher and another student researcher of the master of international community health to compare and merge the main issues in order to come as close as possible to interpretations of participants' views and experiences. Recruitment of health care providers at the first level facility of care was done immediately following their referring a patient to the referral facility, and this helped to reduce potential recall bias. Additionally, to increase honesty in this study, participants were recruited on voluntary basis and freedom to withdraw at any time during the study was emphasized. Participants were not obliged to give information they felt uncomfortable with, and this ensured free expression of views by the participants.

Debriefing sessions with the supervisor and co-supervisor in this study helped to widen the understanding of the issues emerging from the data and to come as close as possible to the interpretations of the participants' perspectives.

- **Dependability**

Dependability means the ability to be trusted. It means worthiness as a recipient of another's trust or confidence [57]. Dependability in qualitative research involves accounting for all the changing conditions in whatever is being studied as well as any changes in the design of the study that were needed to gain a better understanding of the context [52]. The methods that were used to enhance credibility in this study as described above also helped to enhance and strengthen dependability for this study.

- **Confirmability**

Confirmability refers to the objectivity or neutrality of the data so that two or more independent people can reach an agreement about the data's relevance or meaning [52]. To enhance Confirmability in this study, transcripts were made available to fellow student researchers as well as to the co-supervisor. The patterns and themes were also discussed with a fellow student researcher and the main and co-supervisor. The data tools are attached as appendices to this thesis and transcripts are available upon request for interested researchers.

- **Transferability**

Transferability refers to the generalizability of the data, that is, the extent to which the findings from the data can be transferred to other settings or groups [52]. The topic and the context in which this study was conducted were described in great detail. The data tools are attached as appendices to this thesis and transcripts are available upon request for interested researchers who may want to repeat as closely as possible the procedures which were carried out in this study.

- **Reflexivity**

Reflexivity in qualitative research means that researchers become aware of how their biases, values and personal background such as gender, history, culture, and socio-economic status, influence how the study is designed, implemented, data collected, analyzed, and interpreted, and findings reported [52]. Self-awareness in this study was an on-going process from identification of the research area, to writing up of the research findings. I am a nurse midwife by profession and have worked at a teaching referral hospital (QECH) as a bedside nurse/midwife, supervisor and as a clinical teacher. I was part of a maternal audit team at this hospital and through the audit meetings I gained more knowledge of some of the substandard care that goes on at different facility levels of care. In 2000 to 2002, I was privileged to participate in recruiting patients with pre-eclampsia and eclampsia for the Magpie trial in which the benefits of magnesium sulfate treatment for women with pre-eclampsia and eclampsia and their babies was assessed. It was through all these experiences that I became interested in the condition under study. My experience coupled with an in-depth literature review therefore dictated how the study was designed and how questions were framed. I have never worked at the health centre level and was not very familiar with the real world at these centres which worked to my advantage because it made me more interested in the participants' views and it made them feel comfortable to share their experiences.

At the first health centre where I tested the data collection tool, I was perceived in two different ways. Before I introduced myself I was viewed as any other client seeking health services and I was given the same reception like any other client. This assured me that I dressed and looked simple enough as a student. This was advantageous to me because my presence and presentation did not cause undue influence on their part as participants. However, the story changed when I went to the referral hospital for interviews with care providers. When I introduced myself as an international student to the in-charge, I aroused her interest in how I found myself to be an international student. I knew this would be a big problem with every potential registered nurse I might encounter to interview because they have the qualifications to apply for the master's degree program. A similar encounter was with a registered nurse midwife at the first health centre where I conducted interviews. When I introduced myself to her as a student of master degree in international health, she in turn started enquiring about my master program and how she could apply for it before she granted me the permission to interview her subordinates. This could be

attributed to the fact that there are limited opportunities for upgrading in Malawi and many nurses are looking for such upgrading opportunities. Nevertheless it made me feel uncomfortable because it might have introduced undue inducement to participate in the study. Fortunately, most of the participants in this study were not registered nurses, and the registered nurses who participated were not as inquisitive as the two in-charge nurses. This helped me to freely interview the participants without fear of undue inducement.

Being born and raised in Malawi, I was opportuned to conduct the interviews in the local language (Chichewa) and to govern myself according to culturally acceptable standards. Ice breaking questions were used in all the interviews in order to establish rapport and to create a free and conducive atmosphere for the participants. Furthermore, participants were reassured that there was no right or wrong answers and that the discussions were confidential. Their freedom to withdraw from the study was also emphasized. The participants were given freedom to ask for clarifications on any of the questions during the interviews. Communicating in the local language helped the participants to be open with me and express themselves candidly. I used a journal to write and reflect on how the interviews were conducted and improvements were made on possible areas that might have affected what was shared during that particular interview.

3.7 Dissemination

The report for this study project will be finalized and handed over to the University Of Oslo Department Of Community Health as a master thesis. The findings will also be disseminated through conferences at the Malawi College of Medicine and Kamuzu College of Nursing. Copies of the report will be sent to the Blantyre District Health Office and to QECH in Malawi to make them aware of the situation at hand. Dissemination will also be done through workshops, briefing meetings at research sites and personal communication. Publication will be sought with international reproductive health journals and local journals.

3.8 Ethical consideration

The declaration of Helsinki states that considerations related to the interests and well-being of the human subjects should take precedence over the interests of science and society [58]. It is a

requirement therefore, that every researcher should protect his/her participants; in order to develop trust with them; promote the integrity of research; guard against misconduct and impropriety that might reflect on his/her organization or institution [58]. This study was approved by the Regional Research Ethics Committee in Oslo, Norway (Appendix X), and by the College of Medicine Research Ethics Committee (COMREC) of Malawi (Appendix XI). Permission to collect data at the study sites was obtained from the Blantyre District Health Office which is responsible for all the health centres in Blantyre District as well as from the in-charge at the health centres (Appendix XII). Permission to do individual interviews with midwives and with postnatal mothers with pre-eclampsia and eclampsia at Chatinkha Maternity Unit of QECH was obtained from the hospital director of QECH as well as from the Head of Department and the Unit matron. (Appendix XIII).

3.8.1 Informed consent, confidentiality and anonymity

Both oral and written individual informed consents were obtained from the participants after a thorough explanation of the study aims, procedure, expected benefits, risks and expected responsibility of the participants which was done in local language. The consent forms which were written both in local and English language were given to them to read on top of the oral explanation (Appendix XIV-XVII). Participants were informed of their freedom to quit at any time during the interviews if they felt so.

Anonymity and confidentiality of participants were ensured through depersonalization of data during data collection, limiting who had access to the data and stored in a password secured computer. During the interviews participants were asked not to mention their names. All consent forms with their signatures were kept separately from their transcripts so that no connection could be made in anyway. Participants were informed and assured that digital audio recorded information was not for broadcast and no quotes would bear their names. During the FGD, participants were informed that whatever was discussed in the group needed to remain confidential among themselves.

The interviews with health care providers were conducted in a private room of their choice and this helped to facilitate open and free discussion and ensured participant privacy. All questions

asked by the participants concerning the study were clarified before they consented to participate in the study. Contact information of the researcher and the COMREC was given to them in case of further questions after the interviews.

The use of tape recorders in interviews and the FGD was approved by all participants after a thorough explanation of the purpose for its use was given. The participants were informed that the tape recording was required to minimize time for the interview and to accurately capture all their views. Participants were informed that they were free to request the researcher to turn off the recorder at any time if they felt uncomfortable with its use. Even though participant approved the use of their descriptions to explain findings, no names or addresses were used in the presentation of the findings to ensure complete anonymity.

3.8.2 Benefits, Costs and Risks

The benefits of this study were at the individual, societal, and policy level. Individually, the study helped healthcare providers to reflect upon their daily practice and to identify their own gaps and to suggest ways of improvement in the management of pre-eclampsia and eclampsia. The society potentially benefits because with improved care morbidity and mortality will be reduced. It is envisioned that the finding from this study will inform authorities on areas that need improvement in the management of patients with pre-eclampsia and eclampsia at the first level of care; as such it is hoped that strategies will be put in place for improvement.

Participants were made aware of and given travel- costs reimbursements for FGD at the end of the discussion to ensure that there was no unintended financial inducement. Due to the fact that interviews were conducted mostly during lunch hour, lunch was provided at the end of the interview as an incentive; however this was not communicated to the participants prior to the interview to avoid undue inducement.

In summary several methods were used to collect data for this study as has been deeply described in this chapter. The next chapter presents findings from this data collection.

3.8.3 Methodological discussion and limitations of the study

This section discusses the challenges faced while utilizing the selected data collection methods. Specifically, the interviews, observations and public discourse analysis are discussed. It also includes a discussion about the limitations of the study in general.

3.8.3.1 Strength

3.8.3.2 Design

The use of qualitative design in this study was proper for the purpose of the study. The study sought to explore health care providers' perspectives. This design allowed for free expressions from health care providers. The flexibility of the data collection methods also allowed for exploration of issues emerging from individual interviews. The use of triangulation helped to facilitate a deeper understanding of the context in which management of pre-eclampsia and eclampsia is done [52]. The use of local language both in individual and focus group discussion by the researcher helped free exploration and expression of views by researcher and participants respectively, without being limited by difficulties that exist with use of second language.

3.8.3.3 Choice of site

The study is one of a kind that focus on the views and experiences of health care providers at the first level in the district. This will help to increase recognition of this group of people in the health care delivery system. The use of both urban centres and rural centres helped to have a general picture of the burden of pre-eclampsia and eclampsia as well as to compare the context in which these conditions are managed. As such, due to similarities in the context, the focus group consisted of both rural and urban participants.

3.8.3.4 Procedure for sampling of sites

Selection of health centres depended on patients referred from those health centres. If a patient was referred from a particular health centre, that health centre was immediately followed up to invite the health care providers to participate in the study. This reduced recall bias because the health care providers based their responses on the recently referred patient. Additionally, health care providers did not know that the researcher knew about the patient they had referred to the referral facility to avoid giving them a feeling of being blamed for any substandard care that they might have provided. Interviews were conducted at the health centres and at their convenient time

to avoid rushing the interviews which could limit views of participants and the places for the interviews were chosen by the participants themselves.

3.8.4. Limitations

There were several limitations which were encountered in the course of this study. These included design, recruitment of participants, data collection, and cost.

3.8.4.1 Design

The study design and methods that determined the sample sizes and sampling procedures of the health workers in Blantyre made the results generalizable only to participants who share similar characteristics and settings. In short, the findings of this study are tentative as they are inductively developed, prone to subjectivity and subject to modification through subsequent research findings. Similarly, although they may have a wider applicability in the field of pregnancy management, they can only be generalized to the sample under study.

3.8.4.2 Recruitment of participants

Interviews with health care providers at the referral facility were originally planned to be done as soon as possible after identification of the patient admitted from the health centres. However, it was discovered that not all health care providers working in the labour ward at the referral facility were permanent staff; some were on locum (worked on part-time to cover for shortage). As such it was difficult to meet some of the health care providers in time due to their movements between the two work places. In some cases, the researcher had to locate and follow these health care providers to their origin work places to invite them for an interview in order to minimize the time elapse. This might have introduced some recall bias in the study because the participants had to remember when they last did locum and which of the cases they admitted had pre-eclampsia or eclampsia. In some cases, it required to retrieve a file for them to remember.

3.8.4.3 Data collection

Initially, it was planned to conduct repeat interviews but this was not possible due to cost. The budget had actually doubled due to devaluation of the Malawi Kwacha, which was not anticipated during the planning and budgeting phase of the study. Eight participants were invited for FGD, but one could not attend because it was rainy season and the roads were impassable, and the other one had an emergency at home, so only six people participated. Males were not well represented in the FGD; there was only one male health care provider, which might have

made him feel uncomfortable to freely express himself. The others two male participants who were invited are the ones who could not make it. Due to non-inclusion of supervisors in this study, it was difficult to confirm some of the information from health care providers at the first level facility.

3.8.4.4 Type of participants

Originally, it was hoped to fairly represent all cadres at the first level facility of care. Unfortunately, other cadres were not available, such as clinical officers. For those health centres that had clinical officers, the clinical officers could not be found. They had either gone for a workshop, on leave, or had just come for locum at the health centre. As a result only one out of five clinical officers participated which is not representative enough. Furthermore, most medical assistants who were commonly found at the health centres were not involved in management of maternity cases and were not oriented to management of maternity cases in college. However, those included in this study stated that their training at a mission college oriented them to obstetrics and they participated in the care of these women at the health centre. In spite of this inclusion, the findings from this study are not transferrable to this cadre because of the differences in their training.

Only four patients and two guardians were interviewed in this study. The number was very small and their views may not be generalized to other patients. Use of guardians on the other hand might contribute to biased information. For example, they may not be in a position to know what patients learned at antenatal clinic.

In summary several methods were used to collect data for this study. The processes of data collection as well as the limitations encountered in data collection have been deeply described in this chapter. The next chapter presents findings from this data collection.

CHAPTER FOUR

FINDINGS

4.0 Introduction

As discussed in the previous chapter on research methods, data for this study were collected through record reviews, non-participant observation, checklist, semi-structured interviews and focus group discussions (FGD). The main objective of this study was to explore first level health care providers' perspectives on the management of pre-eclampsia and eclampsia. Findings in this paper have been presented using descriptions which have been supported by quotes from the interviews and focus group discussions. Quotations have been used to explain or illustrate to deepen understanding, to give participants a voice, and to enhance readability [52].

The section begins with a brief summary of the burden of pre-eclampsia and eclampsia at Chatinkha Maternity Unit, QECH, as observed during the study period. This is followed by presentation of the demographic information of the whole participants' sample. Finally, a summary of the main findings of the study is presented in the following sections: Understanding of pre-eclampsia and eclampsia; management of pre-eclampsia and eclampsia, perceived benefits of pre-referral care, challenges in the management of patients with pre-eclampsia and eclampsia and suggestions for improvement. In this chapter, results from the analysis of the individual interviews and FGD data are presented. The first part presents findings from first level health care providers, followed by findings from interviews with health care providers and patients at the referral facility.

4.1 Disease burden at Chatinkha, QECH

During the 4 months study period there were 306 patients who were admitted at Chatinkha Maternity Unit of QECH, with hypertensive disorders of pregnancy, of which 166 and 26 had confirmed pre-eclampsia and eclampsia, respectively (Table 1). There were a total of 3810 deliveries during the study period, giving an average of 31 deliveries per day. The prevalence of all hypertensive disorders in pregnancy was 8%, and 5% for pre-eclampsia and eclampsia of the total deliveries. Pre-eclampsia and eclampsia accounted for 62.7% of the 306 cases of hypertensive disorders. Case fatality rate for eclampsia was 7.6%. Table 1 presents general characteristics of all patients with hypertensive disorders during the study period.

Table 1: General characteristics of the patients with hypertensive disorders admitted at Chatinkha QECH (n=306)

Variable	Frequency	Percentage (of 100%)
Referral		
Referred	182	60.9
Non-referred	117	39.1
Missing	7	2.3
Diagnosis		
Pre-eclampsia	166	54.2
Eclampsia	26	8.5
Hypertension	29	9.5
Unconfirmed	79	25.8
Missing	6	2
Age group (years)		
<20	80	26.1
21-30	163	53.3
31 above	63	20.6
Parity group		
0-4	278	90.8
5 above	26	8.5
Missing	2	.7
Antenatal care		
Attended	298	97.4
Not attended	2	.7
Missing	6	2
Mode of delivery		
Vaginal	216	70.6

Caesarean Section	89	29.1
“ Undelivered”	1	.3
Baby outcome		
Alive	251	82.0
Died	42	13.7
Missing	13	4.2
Mother outcome		
Alive	304	99.3
Died from eclampsia	2	7.6(case fatality)

4.2 Demographic information

The demographic information presented here is for all the participants that took part in the study. The individual interviews’ sample consisted of health care providers drawn from Chatinkha maternity unit of QECH, and 11 health centres which referred patients with pre-eclampsia and eclampsia to Chatinkha maternity unit, and also mothers who were admitted with pre-eclampsia and eclampsia at Chatinkha between 1st September and 31st December, 2012. A total of 29 health care providers of different cadres were interviewed at the two different facility levels; 8 at Chatinkha and 21 from the different health centres. The cadres included registered nurse midwives, nurse midwife technician, enrolled nurse midwives, physician assistants (clinical officers) and medical assistants. Seven patients were invited to participate in the study of which one declined to participation. In addition to the 6 patients interviewed, two records of deaths were reviewed also as a pre-requisite for selection of health centres to be included in the study.

Tables 2 and 3 show the demographic information of participants drawn from health care providers’ and patients respectively. As can be seen, there is diversity mainly in age, gender and mean work experience.

Table 2: participant characteristics (health care providers (n=28)

Age groups	No. of participants
Range 22 to 68 years	
20-24	2
25-29	9
30-34	4
35 above	13
	28
Marital status	
Single	2
Married	22
Widow	4
Gender	
Female	24
Male	4
Work experiences in years	
1 to 10	19
11 to 20	4
21 above	5
Profession	
Registered nurse midwives	3
Enrolled nurse midwives	7
Nurse midwife technician	15
Clinical officers	1
Medical assistants	2
Religion	
All Christians	

Table 3: Women participant characteristics (n=8)

Age range 17 to 34	
Age groups	No. of participants
15-19	4
20-24	2
25-29	1
30-34	1
Marital status	
Married	7
Widow	1
Mode of delivery	
SVD	1
Caesarean section	6
Undelivered	1
Outcome of mother	
Alive	6
Dead	2
Outcome of baby	
Alive	5
Dead	3

4.2.1 Interviews with health care providers at the first level facility

The section presents the main findings of the study from the 11 first level health facilities included in the study. The findings are presented under the following sections: understanding of pre-eclampsia and eclampsia; management of pre-eclampsia and eclampsia, perceived benefits of pre-referral care, challenges in the management of patients with pre-eclampsia and eclampsia and suggestions for improvement.

4.2.2 Health care providers' understanding of pre-eclampsia and eclampsia

The first objective aimed at exploring first level health care providers' understanding of the conditions of pre-eclampsia and eclampsia. This was determined through exploring their ability to describe the two conditions as well as their ability to detect and respond to the detected conditions. The results showed that generally there was good understanding of the two conditions among all cadres of first level health care providers who participated in the study. All the 21 participants were able to come up with two main defining characteristics of the two conditions such as pregnancy and elevated blood pressure. Some participants (n=9) were even able to mention presence of protein in urine as a confirmatory test. They were able to differentiate the two conditions by stating the presence of convulsions in eclampsia. Except for a few participants (n=3), there was no mention of at what gestation pre-eclampsia presumably appears. When asked what condition pre-eclampsia is, the following participants described it like this,

“Preeclampsia is when blood pressure is high in pregnant woman, not that person who has started fits, no. But Blood pressure is going up and has signs that the blood pressure is going up such as swelling of legs with high blood pressure above 140 over 90. On the other hand, eclampsia is when the blood pressure is high but she has started fits in pregnancy due to high blood pressure”. **Nurse midwife technician HC 8**

“Preeclampsia are signs that a woman shows like high BP (blood pressure) compared to what it is supposed to be in a person's body who is pregnant, but she has other signs but is not fitting. Eclampsia means that she has convulsions and she also has a raised blood pressure and she is pregnant”. **Medical assistant HC 1**

Almost all health care providers in this study were able to state how, when, and where pregnant women with pre-eclampsia are identified. The commonly mentioned place for detection of pre-

eclampsia was antenatal clinic when women come for their antenatal visits. Apart from the antenatal clinic, they also mentioned the labour and postnatal wards. Some participants stated that some women ignorantly reported at outpatient department (OPD) with complaints of swollen legs, palpitations and shortness of breath, but were eventually referred to the labour ward with suspected pre-eclampsia. However, most participants expressed concern that in most cases they did not have essential tools to assist them to detect the conditions, and as such they just based their diagnosis on presenting signs and symptoms of the woman. The commonly mentioned tools lacking were blood pressure measuring apparatus (machine) and urine protein dipsticks (see Section 4.2.5). When asked where patients with pre-eclampsia are detected, these health care providers stated:

“At the OPD they are also found. Because sometimes we see that they are sent to us if they go to the OPD because of swollen legs, they may think that let me go to OPD and have a prescription, but when they get there; every pregnant woman is handled here at the maternity, which is why at the OPD they refer her here. So I can say that some come from OPD, some from antenatal, and sometimes at postnatal, and sometimes even quite a number we identify them in labor ward when they come for delivery”.

Nurse midwife technician HC 6

4.2.3 Management of pre-eclampsia and eclampsia

4.2.3.1 Management of pre-eclampsia

The second objective was to explore how patients with pre-eclampsia and eclampsia are managed at first level facilities before they are referred to the tertiary level facility for further management. With the exception of two private health centres, there were great similarities in the way patients were managed in most health centres. Reports from both individual interviews and the FGD revealed that management of pre-eclampsia at this level was based on severity of the condition. They stated that patients with mild pre-eclampsia were advised to have bed rest, low salt diet, their feet elevated if they have edema, and have regular blood pressure checks on weekly or 2 weekly basis. In situations where a patient was coming from a very long distance (e.g. 10km), it was reported that the patient was admitted for two to three days for bed rest and for observation. These patients were referred to a hospital if condition worsened or did not improve. Nevertheless

this is without confirmation of diagnosis and without blood pressure machine in some cases. When asked how they dealt with women who came with pre-eclampsia at the health centre, they responded:

“Pre-eclampsia is in two levels. There is mild BP of 140/80 or 140/90. These ones they say we can just advise them on rest and low salt diet and give them time to observe. We tell them to come on the following week for a BP check. Sometimes when they come back the BP is normalized. But if the BP is still high or is still rising, then we send her to Queens for further management”.

Registered nurse midwife HC 9

“It depends the way a patient has presented, if the symptoms are severe we refer right away to central hospital, but if we see that the symptoms are mild we advise the patient like low salt diet, bed rest and the like, but if she presents with risk factors then we refer immediately to go for proteinuria check and the like” **FGD**

As opposed to the government health centres, at the private health centres, health care providers reported that when the patients were identified at the antenatal clinic, they were referred to the assistant physician (clinical officer) who prescribed antihypertensive drugs, and the patient was still advised for a hospital delivery.

“When she went to [] she was given atenolol and HCT of which here we say that, drugs like atenolol we give to someone not pregnant, but has high BP. And again HCT we give to someone who has already delivered, so on our part we felt that, that was a problem”

Nurse midwife technician 3-referral facility

“When you find a person with high BP antenatally you also send her to the clinician to see and prescribe drugs for her” Nurse midwife technician **HC 8**

On the other hand, all participants reported that all patients with severe pre-eclampsia are immediately referred to the hospital for further management. When asked what pre-referral treatment was offered to the patients, most participants reported that there was no pre-referral

treatment given. The majority of the participants were uncertain whether magnesium sulphate was recommended as treatment for severe pre-eclampsia, and most of them reported that they had never given it to pre-eclamptic patients before. However, some participants acknowledged that the guidelines on the management of pre-eclampsia and eclampsia in the health centres recommended using magnesium sulphate, but they too had never used it for such patients. Some FGD participants attributed non-use of magnesium sulphate in pre-eclamptic patients to the fact that they had no urine protein dipsticks to confirm the diagnosis. As such they had no basis for giving it. This report was consistent with what was said in individual interviews where the criterion for use of magnesium sulphate was reported to be presence of convulsions.

“Especially those who have convulsed and we are afraid they can complicate those ones we give them straight away and refer them because it is an emergency, so we do not wait. But we tell those patients with pre-eclampsia to go to the hospital for delivery when labour starts and never to come her”. **Nurse midwife technician HC4**

“I have never seen one with pre-eclampsia being given magnesium sulphate. I am not even sure as to whether a patient with severe pre-eclampsia who has no convulsion is to receive magnesium sulphate” **P 4 FGD**

“We are not giving magnesium sulphate because of the high BP, but there has to be protein positive in urine. So the reason why we don’t give at the health centre is that we do not have the tests for urine protein, so we are not sure whether the BP has just gone up.” **P1 FGD**

4.2.3.2 Management of eclampsia

According to the participants in this study, eclampsia was perceived as an emergency and was dealt with, with urgency. Both reports from individual interviews and FGD revealed that patients with eclampsia were put on intravenous fluids, catheterized and properly positioned to ensure clear airway and to prevent them from injury. Some participants stated that they gave the patient a first dose of magnesium sulphate to control the convulsions and then referred her to the hospital for further management. They also stated that monitoring of the blood pressure, fetal and maternal conditions was done while awaiting transport to the referral facility. However some

participants were not comfortable with the use of magnesium sulphate and thus opted to use valium (Section 4.2.5).

4.2.4 Perceived benefit of pre-referral care

Health care providers reported of more benefits than detriments to the care provided to patients at the health centres prior to referral to the hospital. The majority reported that the pre-referral care reduced further complications to the mother and the expected baby; hence reduced maternal and perinatal mortality. They also reported that the care enhanced management of patients and reduced workload for their counter parts at the referral facility. Most of all, they felt it was a way of fulfilling their responsibility as first level care providers. Explain how they perceived the pre-referral care, these midwives said,

“We would be failing our duty as a health centre if we just send the patient without doing anything. When we are referring a patient at health centre we do have pre-referral treatment, treatment before referral. It is our responsibility as health centres that if we are referring a patient to the central hospital we are supposed to do a few things which we can manage as a health centre. The rest will be done at the big hospital. If we don’t do anything then it means our friends will be busy there doing basic things. The treatment we give here helps the patient to get there in a good condition somehow”.

Nurse midwife technician HC3

They benefit because it saves their life. There might be some complications, yes, but if there will be need for let’s say operation, at least the must both be alive, the mother must be alive and the baby must be alive.

Nurse midwife technician HC5

4.2.5 Challenges in the management of patients with pre-eclampsia and eclampsia at the first level facility

Participants from the individual interviews and the FGD identified many challenges that could explain why some patients arrived in a poor state at the referral hospital. These challenges were grouped into four categories; those that relate to the patient herself, those that relate to the health care provider, those that relate to health facility and those that relate to administration.

4.2.5. 1 Challenges related to the patient

Some participants implicated patients' delay in reporting to the hospital and non-compliance to referral as factors that condition of the patients. As this health care provider laments,

“But there are some when you tell them to go to Queens they just go home and stay, they even stop attending antenatal care, they just come unexpectedly, checking her blood pressure you find it high, you check the notes you find that you already referred her but because she thought that she cannot manage to go there” **Nurse midwife technician HC1**

4.2.5. 2 Challenges related to health care providers

Challenges reported as hindrances to proper management of patients with pre-eclampsia and eclampsia were as follows

a) Rarity of the condition

Most participants and the overall sentiment of FGD participants was that pre-eclampsia and eclampsia were rare conditions that they might meet once in a while. As such they felt incompetent when faced with the conditions. They were more concerned with the management of eclampsia than pre-eclampsia, because they thought it was easier to deal with pre-eclampsia because it just required referral to the hospital during antenatal care; as opposed to eclampsia which required emergency obstetric care.

b) Uncomfortability with use of magnesium sulphate

Even though the majority said that they used magnesium sulphate on patients with eclampsia, there was limited knowledge and comfortability with its use. Most of the health care providers reported that they depended on guidelines and support from colleagues to administer the drug. Some participants (n=2) confused it with antihypertensive drugs. As a result they combined it with diazepam. The main source of their discomfort was reported to be fear of magnesium sulphate side effects and lack of the antidote. The fear was based on theory other than actual experience with its use. Expressing uncomfortability these health care providers had this to say:

“After putting up a drip we give her diazepam injection, instead of Magnesium Sulphate. There are some who went to learn about magnesium sulphate but not us. Yes, when they came back they were explaining to us but for me I should not lie I didn’t get anything.

Enrolled nurse midwife- HC 11

“I cannot say that I have been very comfortable until I am taught properly and adequately. Because the knowledge I have you see; is from school. So if I can know properly, I have been adequately reminded, I can give magnesium sulphate well because I know that the person will be helped”

Nurse midwife technician- HC 6

“So, we first give her a first dose Magnesium Sulphate intravenously then intramuscularly and if need be we also give her Diazepam there and then. Then we put her in the ambulance and send her to Queens”

Nurse midwife technician- HC 4

On the other hand, some participants expressed great comfortability with the use of magnesium sulphate. However, it was later observed that this group of participants had previously worked at a district hospital or they did locum at the referral hospital; as such, they were experienced with use of magnesium sulphate. Conversely, some of the participants who reported using magnesium sulphate for patients with eclampsia had not actually administered it in the real situation; they were basing the management on what they learned in college or on what guidelines stated.

It was also observed that some health care providers were not able to comply with guidelines. In two health centres, they had a patient convulsing in their presence while waiting for ambulance to take the patient to the hospital, yet the patient came with a history of having convulsed at home.

“she came with blurred vision, she could not see properly; until she started convulsions while we were waiting for ambulance.... Because she first fitted at home, and she fitted here too.”

Enrolled nurse midwife HC1

“She was brought here from home because she had convulsions. She had three episodes of convulsions at home. It was at night and it is far to bring her from home to here; however the time they found me here she was not convulsing. She just arrived, then I started taking history whether she has ever had convulsions before, and I checked the BP, all these I was talking to her without any problem. Later in the middle of history taking, she started having the convulsions”

Nurse midwife technician-HC 2

4.2.5.3 Challenges related to health facility’s capacity to handle cases of pre-eclampsia and eclampsia

The participants reported many factors related to the health facility which could contribute to improper management of patients with pre-eclampsia and eclampsia as follows:

a) Lack of essential material resources

The majority of the participants reported lack of resources as one of the factors that constrained their efforts in the management of patients with pre-eclampsia and eclampsia. The resources included blood pressure machine (apparatus), urine protein dipsticks and antihypertensive drugs.

Except for two private health centres, all health centres reported that lack of blood pressure measuring machines was a big problem. Some of the health centres, who happened to possess a blood pressure measuring machine at the time of study, reported that they had just acquired it recently or it was borrowed from colleagues doing some research within their health centre. Some participants reported that due to lack of blood pressure measuring machine they were forced to send patients suspected of pre-eclampsia to private clinics located close to the health centre to have their blood pressure checked. Other participants reported that they sent every pregnant woman with edema of the feet to the referral facility for blood pressure check and confirmation of the diagnosis. Realizing the importance of the blood pressure machine these health care providers stated:

“..in my understanding I find pre-eclampsia to be so disturbing, but I can say that I understand it well. It is just that from experience the main problem that we have here is lack of BP machine hence we do not know some things, we just base on other signs. We also don’t do some tests at our level... if we have cases it means we just suspect that it’s high BP and if we suspect, then we

just refer to Queens, reason being we don't have any BP machine"

Nurse midwife technician HC 10.

"As I have already said that we don't have a blood pressure machine, so if its preeclampsia, for us to know that it is pre-eclampsia, that is she has not fitted okay, she may come with swelling, she will look swollen up. There is a clinic close by so we send them there to have their BP checked and give us feedback".

Nurse midwife technician HC7

Similar problems concerning scarcity of blood pressure machines also emerged from the FGD. Another challenge was lack of urine protein dipsticks. All participants except two from one private clinic reported that they had no urine protein dipsticks in the health centres.

Lack of antihypertensive drugs was also reported by participants from both individual interviews and the FGD. With the exception of the two private health centres, all of the centres had no antihypertensive drugs and they bemoaned that this made their care incomplete because they did not tackle the main problem in pre-eclampsia and eclampsia, which in this case is the elevated blood pressure. This what the group said;

"Drugs like hydralazine are not available at the health centre, which is a very big problem we meet. Because with hydralazine we are fighting the rising of the BP (blood pressure), the cause of the convulsions is the BP. So even if we give her magnesium sulphate, we still feel that where she is going even on the way she may continue having convulsions". **FGD**

Other resources also reported included oxygen cylinders, airway devices and spatulas (Table 4)

Table 4: Resource availability in the 11 health centre

Item	availability of reasources out of (11) Health Centre
Blood pressure measuring machine	5
Stethoscope	11
Thermometers	6
Intravenous fluids	11
Magnesium sulphate	11
Hydralazine	0
Protein dipsticks,	0
Bladder catheters	10
Urine collection bags	1
Oxygen cylinders	1
Suction machine	11
Spatula	1
Airway devices	2

b) Shortage of staff

Another reported problem was shortage of staff. Most participants reported that management of eclampsia requires team work but it was difficult for them because in most cases they operated alone. The participants stated that due to shortage of staff, patients with severe pre-eclampsia and eclampsia were not accompanied to the referral hospital by a health professional on referral; they just went with a guardian, and sometimes with a cleaner. Reports from FGD were also similar with this report. When asked on patient safety and escort this is what was reported:

“On the safety issue, the problem is that this patient is supposed to be under escort, in case the

*patient has some mouth secretions, since the patient is sedated. But it is difficult because this is not the only condition that needs escort, there are other conditions like cord prolapse and the like, they are supposed to have escort. Escort, we may say a nurse should go, but because of shortage, you find that the nurse is all alone in the labor ward, if she goes, who is going to man the labor ward? Okay, let us say the person has come at the time when the labor ward is well staffed; the nurse will go, but how is she going to come back?"***Nurse midwife technician HC 10**

c) Transport problems

Delay of ambulance was also reported by health care providers as one of the major challenges in the management of patients with severe pre-eclampsia and eclampsia. Participants, except for those working in private health centres, expressed concern over the delays of ambulances. The participants stated that on average the ambulance took three to four hours before arrival after it had been called. It was reported that there was only one ambulance that was stationed at the district health office that ferried patients from all health centres, and consequently, it was difficult for the patients to be collected and ferried to the hospital on time. It was also reported that most often the ambulance came already full with patients, so much that it was so difficult to put an eclamptic patient in the proper lying position. Furthermore, the transport problem was also reported as to having contributed to health care providers' inability to escort critical patients, as observed in the first quote (HC10) above. Bemoaning transport problems one of the health care providers concurring with the other members of the FGD narrated:

"Because a real ambulance is supposed to have everything inside, but if you observe you see that when they are coming they remove the oxygen cylinder, they remove what, every necessary thing is removed, and they say that they want to load many (patients). So it happens that the ambulance you have called is coming from other health centres, is full. So much that even for you to lay down the eclamptic patient it becomes difficult, ..."

FGD

4.2.5.4 Challenges related to health centre administration

The major issues stated in relation to administration of the health centres were two fold; limited supervision and lack of feedback from the referral facility.

a) Lack of supervision in the management of patients with pre-eclampsia and eclampsia

Health care providers reported that they received general supervision but no supervision for the management of patients with specific complications like pre-eclampsia and eclampsia. They also expressed concern over the manner in which the general supervision was done as illustrated in quotes below.

“To say the truth the only supervision we get is when the matron comes, but not coming just for pre-eclampsia patients. May be they depend on the state registered nurses, like here we have one and she is the one who assists. There is no support supervision from DHO [Department of Health Office].” Assistant physician -HC3

“As my friends have already pointed out that it is like fault finding, and when they find the fault they fire on you, forgetting that we cannot work if we do not have the resources FGD

“You find that if they find you outside, they shout at you right there. “Must I be disgraced in the presence of my neighbor who might have come for antenatal care? No” FGD

One participant expressed that supervision would help to ensure a uniform management of obstetric complications in the health centres as can be observed by what this health care provider said:

“Supervision would ensure uniformity in the management of the patients. But you find that in the same district people are managing same conditions differently, all because we do not have a chance to come together as people of the same program to discuss or refresh on how we go about different conditions. Such refreshers would also help to remind some of us of the things we forgot long time ago. Yes, we are human beings okay, and in the course of our work we always wish to ask someone; and there are other things which you consult books, so if it were possible to be reminding each other some of these things it would be helpful.” Nurse midwife technician HC4

b) Lack of feedback from the referral facility

There was very little feedback that health centres received from the referral hospital regarding the patients they referred. It was reported that in most cases the feedback was negative over the two-way radio communication system (Motorola) or during maternal death audit meetings when deaths are being reviewed. To this effect, the health care providers at the two facility levels reported:

“At times it’s [the feedback] on the phone, arguing over having sent a patient after being told not to. I remember one time, a certain doctor called to ask why something was not done on a patient. They exchanged words, it wasn’t a nice scene, and especially for patients to have heard such unprofessional conversation; the other person ended up crying. It was over the Motorola”.

Medical assistant-HC 1

“The main feedback is [from] the patient when she comes back and has come for checkup, that’s when she says “sister, do you remember me? You sent me and they helped me like this, the person herself telling you when she comes back. But not like a referral centre informing us, I cannot lie. Otherwise, you just see the nurses’ council has arrived, and start telling, you, “you assisted such and such a woman on this day”, and you start wondering, “such a woman? I see many women”, meanwhile you would have forgotten about the patient, you see?” **FGD**

c) Perceived benefits of feedback

The health care providers were of the opinion that feedback would give them an opportunity to learn from specialist feedback for the cases they refer to the hospital, since most often the patients were sent on an assumed diagnosis of pre-eclampsia or eclampsia due to lack of laboratory investigations. Furthermore, they stated that feedback would motivate and give them job satisfaction during the course of their work. When asked what they perceived as the benefits of patient feedback, these providers said:

“Feedback would help to give us knowledge that ooh what I did was right because sometimes experience is what teaches us a lot. Sometimes you learn in class but if you meet the thing, experience and manage it, you see that okay, next time I will do the same”. **Nurse midwife**

technician- HC6

“It could be encouraging to us that we are really working well, we managed to help and refer the patient and where she was referred, she has received the appropriate care, and she is alive and well so is the baby. It would make us feel confident that we are doing the right thing, because our aim is to have a live mother and live baby. Losing a mother and baby isn’t nice, it’s not amusing. It portrays an image of not knowing what one is doing.”

Nurse midwife technician HC 1

4.2.6 Suggestions for improvement

The participants suggested that there is need for adequate resources such as low beds, enough medicines such as Magnesium Sulphate, antihypertensive drugs, enough spatulas and working blood pressure machines. They also suggested the need for improved communication between the health centres and the referral hospital. They also mentioned quarterly supportive supervision and refresher courses on management of pre-eclampsia and eclampsia.

When asked what they would suggest for improving the care of patients with pre-eclampsia and eclampsia, they said,

“We must at least have adequate resources. I don’t know whether we are allowed to have oxygen in health centres, but it can help us. Because even with resuscitation of the baby in case she delivers the baby will be asphyxiated secondary to the mother’s convulsions, so an oxygen cylinder will be helpful. And also the calcium gluconate, we are talking about that may be while waiting for the ambulance which might be delayed, if anything goes wrong we can give. And antihypertensive drugs like methylodopa and nifedipine, because hydralazine also has its own problems because it requires close observation too because it can bring down the BP abruptly”

FGD

4. 3. Interviews with health care providers at referral facility

As stipulated in the previous chapter on methods, interviews were conducted with eight health care providers at the referral centre, i.e. Queens..., to better understand the condition of patients

on arrival at this facility level in relation to the care they received at the first level facility. The study also sought to understand health care providers' perceptions about the challenges that their counter parts face at the first level facility. In this section of the findings, results pertaining to interviews at the referral facility are presented. Issues which were explored included their understanding of pre-eclampsia and eclampsia, their assessment and perception of the patients' condition on arrival to the referral facility, what they perceived as benefits and barriers to proper management of referrals at their facility and suggestions for improvement. In the first section demographic information of these participants is presented.

4.3.1 Health care providers' understanding of pre-eclampsia and eclampsia

The health care providers, like their counter parts at the first level facility of care, were asked to describe what they understood about the two conditions of pre-eclampsia and eclampsia. These health care providers had better understanding of the conditions. The health care providers were also able to mention all defining characteristics of the two conditions as conveyed in their descriptions below:

*“It is a condition of high BP in a woman who is pregnant but has not started fitting. When it is an ordinary high BP, urine protein is negative, and does not have signs like edema of the legs, urine protein is okay, the BP just goes up, and it is just ordinary BP. But for people with preeclampsia and eclampsia, they can have all those signs, high BP, swollen legs, urine protein is also positive. And eclampsia is when BP is high but she has also started to fit”.***HCP 3**

“Preeclampsia is when a woman is pregnant but has high blood pressure, and when you test her urine there are proteins. Eclampsia is when the woman has blood pressure, has proteins in urine but now she has fits, is fitting” **HCP 4**

4.3.2 Patients' condition on arrival as assessed by health care providers at referral facility

The health care providers were asked to describe the patients' conditions on admission before they rendered any care to them. They reported that there was generally inadequate care offered to the patients before they were referred to the referral facility. While some patients received first aid treatment, some patients arrived without having received any. Patients who were reported to

have received first aid management were those who had eclampsia. Except for two patients who were referred from private health centres, none of the patients with severe pre-eclampsia received any first aid management (Table 5).

Table 5: Pre-Referral Care of the 8 Patients included in this Study

Item	No. of patients who received stated care out of 8
BP checked	6
Temperature checked	3
Pulse rate checked	2
Respiration checked	1
Bladder catheterization done	2
Urine protein checked	0
Intravenous infusion	4
Magnesium sulphate given	4
Valium given	1
Hydralazine given	0
Other antihypertensive(given) methylodopa and HCT	2
Ensured proper position in transit to hospital	0

The pre-referral care that was commonly reported included intravenous infusion, magnesium sulphate loading dose and rarely catheterization. It was also reported that none of the referred patients were accompanied by a health care provider. Two descriptions are provided to illustrate the conditions of patients upon arrival:

“At the time I was admitting her she was complaining of headache which started on the way to this hospital, she was awake, but her whole body was swollen up, she had no iv litre, she had received panadol, diazepam and aldomet, and at that time her BP was very high, 225 over 145”. No catheter, inserted, no albumin checked. They were supposed to put her on a litre and insert a catheter to monitor intake and output.

HCP 2

“This patient I just found her on the trolley, another nurse told me that there was a patient on the trolley with eclampsia referred because she had convulsed at home. When I was preparing

*to take this patient on the bed, when I checked her, I found that the patient was cold, no heartbeat, so that's the condition. But before coming here this patient, she convulsed at home, and after convulsions she went to the health centre. At the health centre they referred that patient here. But as she was arriving, she was already dead". "She had an intravenous infusion line but had no catheter. And they wrote that she received Mag sulphate, she received Magnesium sulphate 4gm iv, and magnesium sulphate IM, as a loading dose". "[....]" "No, she just came with the driver; no midwife escort" **HCP 5***

4.3.3 Perceived effects and benefits of pre-referral care at referral facility level

The health care providers were asked to state how the pre-referral management of the patients impacted their management. The perceptions about the care were mixed. Some participants were satisfied with the pre-referral care while others were dissatisfied with the care, as illustrated in the narratives below.

*"It helped us because the patient had stopped convulsions, I did not even know that she was an eclamptic patient, she came walking. A group of patients just came at once by ambulance, so it was the drip that she had that got my attention, so I said to myself, "ah, this one must have a problem", so I called her that "come here, let me see your paper". **HCP8***

*"I feel that it gave us much pressure even though we are not supposed to have pressure when a very sick patient comes to us, right? But we saw that the patient was delayed, because if she had come with at least a bit lower manageable BP, we could have just managed and then wait for her to deliver normally, it would have been better, but because she came in a very critical condition so it drew attention. Everyone had to stop whatever they were doing to assist the patient". **HCP 7***

4.3.4 Perceived barriers to proper pre-referral care

The health care providers at the referral facility level were asked why they thought patients were inadequately managed prior to being referred. There were similarities in what all the participants stated as challenges at the health centre. The reported perceived challenges included shortage of

staff, lack of resources, limited knowledge, and problems with transportation of patients, as reported in the narratives provided below.

“..health centres do not have their own ambulances, so it happens that it has been called by health centre 1, 2,.. it is upon the driver to decide where to start from, then where, because most of the times many patients come at once but coming from different health centres. HCP 4

“It is just that in health centres sometimes we don’t have BP machines. I am also one of the health centre staff, I don’t belong here. So sometimes we just examine the people, provided we do a vaginal examination, whether they have high BP we don’t know. Really, we just examine the other things and then write “no BP machine” at the bottom, and refer her here where they diagnose the rest. We miss a lot at the health centre. Unless it is now eclampsia, that is when we realize that “ii so this person had high BP”, and then we refer her. But it is just that we don’t have the tools to diagnose a person. Because, supposing they had a BP machine, they would have checked her and see what her BP was”. HCP 1

4.3.5 Suggestions for improved pre-referral care for patients with pre-eclampsia and eclampsia

The health care providers made several suggestions for the improvement of care for patients with pre-eclampsia and eclampsia. They suggested the need to provide health centres with adequate supplies such as blood pressure measuring machines, urine protein dipsticks, antihypertensive drugs and magnesium sulphate. They also suggested that there was need for health care providers at the health centres to be updated on the current management of pre-eclampsia and eclampsia, as well as to have exchange programmes to allow them to practice the management at the referral facility. As much as they appreciated that shortage of staff was a general problem in the country, they still suggested that there was need to increase human resource at the health centres. On the other hand, they suggested that critical patients, like eclamptic patients, need an escort to prevent further complications. Asked to make suggestions for improvement, this is what they said,

“I would like in-service or refresher courses on management of preeclampsia and eclampsia. For them to know what they are supposed to do before referral. Because such a person is at risk of convulsions. She can end up with eclampsia anytime. So they must do first aid treatment that

at the receiving point or in transit the person must not be at risk of convulsing or that at least where she is going they must have a starting point. They must at least put up an iv line, catheter, and that will help. On the other hand the supply of equipment must be readily available, like urine dipsticks and catheters”HCP 6

“I feel that if they could be given specimen bottles to collect blood. When they refer the patient they must get blood specimens that are required from a patient with high BP, it would be better. And also catheters and things for testing urine for protein so that they can do everything for the patient and here we just continue the care of the patient. They must also be given enough drugs like magnesium sulphate, and also there must be enough nurses at the facility, so that one can be managing other patients while this one is also being managed.... It is also necessary that the nurses from the health centres they must have an exchange program, for them to come here at Queens to work to see how we manage these patients”HCP 3

4.4. Interviews with patients and guardians

4.4.1 Introduction

As was stipulated in the previous chapter on methods that patients were included in this study as a criterion to selecting health centres to be included in the study, as such only six interviews were conducted with patients who had been referred from the health centres due to pre-eclampsia and eclampsia in the first month of the study. Two guardians were included as patient participants because their patients were not in a state to talk let alone remember what actually happened to them due to eclampsia. The patient participants were asked:

- a) What symptoms made them seek medical care
- b) How they were treated at the health centre
- c) How they felt to be referred to the hospital
- d) How they travelled to the hospital
- e) How else they would have liked to be cared for before referral to the hospital

4.4.2 Recognition of problem

Patients were asked to describe symptoms which made them to seek help at the health centre and what they thought was the meaning of the symptoms. The results showed that all six participants were unable to relate the signs and symptoms to pre-eclampsia and eclampsia before diagnosis was made at the antenatal clinic. One patient associated her symptoms to the sex of the baby she was expecting. Another patient associated the signs and symptoms to being term and due for delivery of the baby. One patient thought they were signs of malaria. One guardian just did not know what was actually happening with her daughter. When asked why they went to the health centre some said;

*“No, there wasn’t any problem that I saw; I just stayed just like a person...this swelling problem, others told me that when others are expecting a male baby they swell legs or arms. When it is a female baby some may also swell legs or arms. So in my case the female child that I have, I did not swell. So with this male one, I was found with this swelling problem, but the problem is that it was my whole body that got swollen”***Patient -1**

“Some people told me not to worry about it, because it meant that I was going towards delivery days, some were saying that, like my neighbours” **Patient-4**

“For me, I didn’t know what the problem was really, me too I was just feeling scared that, “should a pregnant person be fainting?” **Guardian to eclamptic patient-6**

4.4.3 Pre-referral care at the health centre

Patients and guardians were able to narrate the care they received at the health centre before being referred:

“when I arrived, I arrived at their maternity ward, then they started asking me questions about what I was feeling, I started explaining that at night I didn’t sleep well I just felt lower abdominal pains, so they put me on a bed and checked if the baby was still beating and they palpated my abdomen to find the baby’s position, and they measured my BP and that’s when they found that it had risen a lot. So there they don’t have some equipment, also they don’t have some medicine

nearby, so I must just go straight to a big hospital, that's when we were coming here"

Patient-5

"When we arrived at the hospital, they welcomed us very nicely and helped us. Whilst we were there she fainted again. That is when they told us that, "you cannot stay here, we can't do otherwise, you must go, we will call for an ambulance to come", when they had put her on a water drip that is when the ambulance arrived... they gave her some medicine because they injected her, right there and put her on another water drip" **Guardian to eclamptic patient.**

Apart from two patients who were referred from the two private health centres, the other two and the two guardians could not say what type and purpose of the drugs that was given to them, which may indicate lack of explanation on the part of the health care providers.

4.4.4 Compliance with referral

All participants reported that they were happy with the referral because they knew that the referral hospital had more resources and specialists to take care of them. One patient had this to say;

"There was no problem because at the hospital where I went they don't have a scanning machine, they don't have electricity. So I felt that it is good to come here so that they can see what the problem is". **Patient-2**

4.4.5 Transportation

All patients reported that they were transported by ambulance from the health centres to the hospital. However, three patients reported that there was some delay with the ambulance, either on arrival to the health centre or en route to the referral hospital, as can be learned from the two narrations below:

"Considering the time we arrived and when the ambulance was called, I think it came quickly.

But the travelling was that from there it went to [], from there it also stopped at the hospital in [], so in all those places we stopped; the drip even run out on the way”

Guardian to eclamptic patient-6

“The ambulance was called around ten in the morning. ...it came around six o’clock and we got here around 8 o’clock. Because the time I got there I found another patient waiting, it is the ambulance that delayed to come. They had to call for the second time, which is when it came in the evening” **Patient-2**

4.4.6 Patients’ satisfaction with pre-referral care

Participating patients and guardians were asked to express how they felt about the care they (or their loved ones) received at the health centre and to make suggestions for improvement. Four participants were satisfied with the care they received. One guardian was satisfied but was of the opinion that it was not upon her to judge the care her daughter received at the health centre because the health care providers knew better than her, so she could not tell them what to do. Asked what they felt about the care and how satisfied they were, this patient and guardian said this:

“...as you have seen that when I came with the child, I thought that I will sleep in the room with her right? But to find out that they said I should go back home, so I don’t know how things were during the night”. **Guardian 2 to patient 3 with eclampsia**

*“..it was the fact that they told me to go to Queens when the time was up already, but the doctors at my place didn’t explain anything to me they were just looking at me (*almost crying*). They were doing things like, if you want them to assess you, you have to ask them to”.* **Patient-4**

4.5 Summary of findings

The findings of this study can be summarized as follows:

- a) Every health centre visited had health personnel who knew how to manage a patient with pre-eclampsia and eclampsia. However, they were understaffed and limited by lack of essential resources and this compromised the quality of services provided.

- b) There was noncompliance to guidelines as demonstrated by nonuse of magnesium sulphate on cases of severe preeclampsia by the health care providers at the first level
- c) First level health care providers received limited supervision for obstetric complications and they had little or negative feedback from the referral hospital only.
- d) Health care providers at the referral facility acknowledged the challenges faced by first level health care providers
- e) Patients in this study had limited knowledge about pre-eclampsia and eclampsia. Analysis of the findings in this paper have been presented using descriptions which have been supported by quotes from the interviews and focus group discussions. Quotations have been used to explain or illustrate to deepen understanding, to give participants a voice, and to enhance readability [53]. Tables have been used to present participant characteristics and observations on availability of resources.

CHAPTER 5

DISCUSSION

5.0 Introduction

The previous chapter presented findings of this study. In this chapter, the main findings of this study are discussed. The first section discusses findings in relation to health care providers' understanding of the two conditions which are followed by a discussion on challenges that might hinder proper management of patients with pre-eclampsia and eclampsia at the first level facility of care and which possibly explain why some patients arrive in a compromised state at the referral facility.

The main objective of this study was to explore first level health care providers' perspectives on the management of patients with pre-eclampsia and eclampsia before referral to the tertiary facility. Even though the findings may not be generalized due to the inherent nature of qualitative research and methodologies used, the small samples involved and the limited time taken to collect data, the study has revealed several issues that potentially affect care of patients at the first level facility. The qualitative approach that was used to collect data in this study helped to deeply understand the context in which health care providers managed patients with pre-eclampsia and eclampsia and the triangulation of methods allowed for corroboration and confirmation of converging perspectives thereby representing a more accurate picture of reality.

The study showed that the quality of pre-referral care for patients with pre-eclampsia and eclampsia was generally substandard and was inconsistent with best practices. The results highlight five main factors that contribute to pre-referral substandard care of patients with pre-eclampsia and eclampsia at the first level facility of care. They include: inability to put knowledge into practice, lack of basic essential resources, shortage of staff, transportation problems, lack of supervision, and inability of patients to recognize pre-eclampsia and eclampsia

5.1. Inability to put knowledge into practice

Although health care providers demonstrated great awareness of pre-eclampsia and eclampsia and moderate knowledge for the management of these conditions, they were not able to apply the knowledge let alone the guidelines into real situations. While the WHO uses the presence of skilled birth attendants (SBA) as an indicator of progress towards reducing maternal mortality

worldwide, their mere presence alone may not translate into practice [59]. There is need to ensure skill competence for better results. In a study to assess SBA competence in five high maternal mortality settings as a basis for initiating quality improvement, there was a wide gap between current evidence-based standards and provider competence to manage selected obstetric and neonatal complications. The study was done in two phases; first phase included 166 purposively selected providers in Benin, Ecuador, Jamaica and Rwanda and in phase two 1358 providers from tertiary, district and primary health facilities in Nicaragua. The researchers reported that participants from both phases of the study did not recognize diastolic reading of blood pressure that defines severe pre-eclampsia and the right approach to management of this condition. The mean scores being knowledge and management of pre-eclampsia were 63.1% and 51.2% in phase one and two respectively. In the same study nonprofessional nurse midwives scored lower than the doctors and student doctors [59]. Similarly, in the present study, health care providers were aware and able to recognize patients with pre-eclampsia but were unable to manage them according to guidelines for evidence based practice. Women detected with mild hypertension were advised on rest and sent home.

One characteristic of mild pre-eclampsia is its tendency to unpredictably rapidly progress to severe pre-eclampsia and eclampsia [5]. As such, sending women with mild pre-eclampsia home invariably exposes them to risk of eclampsia because these women have limited possibility for rest. According to essential best practices and basic maternal and newborn care guidelines, all pregnant women with pre-eclampsia regardless of severity of the blood pressure, are supposed to be referred to the hospital for specialist care, unless proven to be ordinary hypertension [11; 48]. Non-adherence to recommended practice was also observed with nonuse of magnesium sulphate for patients with severe pre-eclampsia in this study. In spite of considerable gains associated with the use of magnesium sulphate [42; 51], nonuse of magnesium sulphate still exists in most countries. In a study done in 20 of 32 states in Mexico, only 33 of 68 eligible women who died from severe preeclampsia and eclampsia received magnesium sulphate and the rest of them got no anticonvulsant at all [60]. A study with an objective to observe pregnancy outcomes in eclamptic and to explore the avoidable factors contributing to the adverse outcome was conducted at the Hayatabad Medical Complex in Peshawar, Pakistan. The researchers reported use of magnesium sulphate only in 12 of the 71 patients who were eligible for treatment with this

drug [61]. In the present study all patients with severe pre-eclampsia (n=4) who were referred to Queen Elizabeth Central Hospital (QECH) from health centres included in the current study did not receive magnesium sulphate. Nonuse of magnesium sulphate for patients with severe pre-eclampsia in the present study causes great concern, considering that patients with these conditions may take a long time to get to the referral facility due to long distances. The long distance and the potential delay are good enough reasons for giving a prophylactic dose of magnesium sulphate to prevent convulsions on the way [11].

Another reason to give prophylactic magnesium sulphate is the fact that these patients do not have a professional escort to the referral facility to administer an anticonvulsant in the event of convulsions in transit. Just to emphasize the importance of pre-referral magnesium sulphate for patients with severe pre-eclampsia, in this study, on two different occasions, patients with suspected severe pre-eclampsia convulsed in the presence of a health care provider while waiting for ambulance to take them to the referral hospital. If patients like these are given a prophylactic dose of magnesium sulphate, such incidents may be prevented or minimized [11; 42].

Reasons for none or underuse of magnesium sulphate have been reported elsewhere. In a study whose objective was to examine the factors that might affect the translation of randomised controlled trial (RCT) findings into policies and practice in developing countries: a case study of magnesium sulphate for pre-eclampsia; Aaserud [62], reported that licensing and drug availability; inadequate and poorly implemented clinical guidelines; and lack of political support for policy change contributed to nonuse of magnesium sulphate. Similar findings were reported by the White Ribbon Alliance in Pakistan in a review paper on magnesium sulphate for the prevention and treatment of pre-eclampsia and eclampsia [49].

Nonuse of magnesium sulphate for severe pre-eclampsia in this study was attributed to fear of adverse effects, lack of antidote, and lack of urine protein dipsticks to confirm the diagnosis; even though these reasons may not be good enough for not giving a single dose of magnesium sulphate. While it is true that magnesium sulphate can cause adverse effects, these effects are very rare [42].

Whereas lack of guidelines has been reported by other researchers to deter use of magnesium sulphate [49; 60; 61;62], all health centres except two had guidelines on the management of pre-eclampsia and eclampsia, as well as on proper administration of magnesium sulphate. However, proper training and monitoring for proper implementation could be lacking [60].

Training and opportunity for practice through working at the referral or district hospital need to be made available for health care providers working in health centres. This will help to clear misconceptions and fears about magnesium sulphate and help health care providers develop competence and confidence in its use.

5.2 Lack of material resources

The most basic but crucial resources lacking for the management of patients with pre-eclampsia and eclampsia in this study included blood pressure apparatus, urine dipsticks; and antihypertensive drugs. The lack of blood pressure apparatus and urine dipsticks in these health centres is worrying considering that these are simple and very basic resources, yet crucial for early detection of women with pre-eclampsia and eclampsia. Screening of women with pre-eclampsia is primarily done by blood pressure check and urinalysis for urine protein [10]. Blood pressure machine is one of the commodities in the essential package for quality antenatal care [63]; unavailability may suggest lack of commitment by the supervisors [62] The lack of these resources in the health centres implies that most women with pre-eclampsia are missed during antenatal care and that is detrimental to both their health and that of their expected baby. The importance of blood pressure apparatus and urine protein dipsticks need not be over emphasized, given the number of women(n=182) referred from health centres with suspected diagnosis of pre-eclampsia in this study. It is of concern to observe that women are complying with the call to attend antenatal care, but do not receive the optimal care that is due to them [64]. In the present study, 99.3% of the women had ever attended antenatal care.

However, a few factors may explain the scarcity of blood pressure machines. Firstly, it could result from supervisors' failure to appreciate the importance of certain standards of care [62], such as blood pressure check for early detection of pre-eclampsia. Such standards may look simple and unimportant but may prove the only chance to prevent development of eclampsia and

consequential death [7; 42]. Sufficient attention needs to be given to availability of resources in these health centres to ensure proper management of patients with pre-eclampsia and eclampsia. On the other hand, lack of funding and dependency on donations for provision of important services like maternal health may also explain this lack of essential equipment and the consequential compromised quality of care for pregnant women [30]. In addition to this, the problem can also be self-inflicting through poor procurement procedures which result in purchase of poor quality blood pressure machines [64]. Poor quality things do not last; as such they prove expensive because they require frequent replacement, which would not be feasible in a resource-limited country like Malawi. In addition to blood pressure machines, the problem of lack of dipsticks was also observed at the referral facility. This also causes concern given that referral centres are supposed to cover for shortfalls in health centres [7]. Barua et al[62] in 2011 in their study on facility and personnel factors influencing magnesium sulfate use for eclampsia and pre-eclampsia in 3 Indian hospitals, reported lack of most essential supplies and equipment such laboratory and diagnostic tools; monitoring facilities; essential medications, including magnesium sulfate; a functioning respirator; and essential staff as opposed to the lower secondary level facilities which had the resources but did not have adequately trained staff. In the present study, 79 patients with high blood pressures did not have confirmed diagnosis due to lack of protein dipsticks at the referral facility, which led to them being treated blindly. High caseloads that are generally experienced by referral facility levels might explain this lack of dipsticks [62].

Lack of resources as a barrier to provision of quality obstetric care is not a new finding by this study. Kafulafula[65] in 2005, in their article on challenges facing nurse-midwives working towards safe motherhood in Malawi, reported that limited resources and shortage of staff compromised the quality of care given to obstetric patients in secondary level facilities and it impacted on the quality of education on nursing and midwifery students. It is worrying to consider that since 2004 safe motherhood campaigns have been and are still going on in Malawi encouraging women to attend antenatal care and to deliver at the hospital with skilled attendants, yet the care that is offered may not be skilled at all due to lack of resources.

Lack of antihypertensive drugs in health centres was another drawback in the management of pre-eclampsia and eclampsia revealed by the present study. Hypertensive drugs are crucial in the

management of severe preeclampsia and eclampsia in order to control the blood pressure [7; 11]. The drugs of choice are hydralazine, nifedipine and methyldopa [63]. Lack of antihypertensive drugs in these health centres is a great risk for severe preeclampsia and eclampsia given that the commonest killer in eclampsia is cerebral vascular accident.

In a review of maternal deaths from hypertensive disorders in South Africa, Moodley [44] in 2007 reported that 50% deaths from eclampsia were due to cerebral vascular accident and that was attributed to poor blood pressure control both at facility level and in transit to the hospital [44]. This means that, all patients in the present study were invariably exposed to the risk of cerebral vascular accident, hence to death. It was however, beyond the scope of this study to establish why antihypertensive drugs were not found in health centres. None of the participants in either the FGD or in-depth interviews could explain why hydralazine was not supplied to health centres. Nevertheless, there is great need for supply of these drugs to health centres to improve the management of patients with severe pre-eclampsia and eclampsia.

5.3 Shortage of staff

Shortage of staff is a well-known problem in Malawi and has been acknowledged by the government [66]. The main reasons for shortage of staff include deaths, retirement, and brain drain [36]. The shortage of staff is very pronounced in rural health centres [36]. This may be due to the fact that most midwives are female and they tend to move to the cities following their husbands, as well as lack of a conducive working environment in the rural areas. In a study to identify factors for retention of midwives in Malawi, the participants in this study reported that being married with a husband living in the city and being female and single was a big barrier to work in the rural areas [67]. Single female nurse midwives felt insecure that they might end up not getting married if they accepted to work in the rural areas [67].

The government's efforts to improve the situation for the past 10 years include increasing the student intake in medical and nursing colleges, and recruiting retired professions to cover the nurse to patient ratio gap [36]; but the status core seems to remain the same. Critical shortage of staff is deterrent to better patients' care both institutional and in transit to the referral facility. Team work is very crucial for prompt resuscitation of patients with eclampsia [11; 13]; which

was observed as impossible in this study due to shortage of staff. Moreover, critically ill patients require escorts to ensure continued care in transit to the referral facility [44]; but it is unfortunate that in the current study critically ill patients were transported alone with a guardian or sometimes with a cleaner who do not have medical knowledge which potentially lead to unexplained in transit deaths. Substandard care as a result of shortage of staff has been well-documented by other researchers [23]. Hassan-Bitar and Wick [23] in 2006, reported that shortage of staff contributed to substandard obstetric care for women in a large referral hospital in Pakistan. Even though this study was done at a tertiary facility and with a bigger sample than the present study, the findings are similar.

5.4 Transport problems

A well-functioning referral system allows for timely transfer of emergency obstetric emergencies. Despite recommendations to improve communication and referral systems through placement of ambulances in rural facilities and introduction of bicycle ambulances to speedup transportation of women with obstetric complications [28; 38], the situation remains pathetically the same. In this study, critically ill patients had to wait three to four hours for transport to the referral facility. What is more, as reported by one patient, the patients had to stop over in other health centres to collect other patients which on its own compounded the delay and compromised the patient's condition. Furthermore, critical eclamptic patients require specific positioning in order to prevent choking during convulsions [11; 13]; which makes it nearly impossible when an ambulance is full with other patients.

Patient transportation problems have previously been reported by other studies in relation to the three phase model of delay associated with maternal deaths. Cham, et al,[68] in 2005, in their study on maternal deaths in order to assess access to emergency obstetric care in rural Gambia, they reported that transportation difficulties were experienced by women with obstetric complications even after reaching the first medical facility due to lack of a readily available ambulance at the facility. They also reported that traveling time was prolonged for these women due to long distances, visiting of different health facilities, poor roads, and ambulance conditions. Similar experiences were reported by one guardian to a patient with eclampsia that they had to visit different health centres before getting to the referral hospital. Delays in getting to the referral facility may contribute to adverse outcomes of women and their unborn babies. Special attention

needs to be given to transportation issues in order to enhance accessibility to comprehensive emergency obstetric care and to reduce mortality from eclampsia. Limited attention to such issues of delay may suggest the slow progress observed towards achievement of the millennium development goal number five [4]. It must be noted that even with increased access to skilled attendants at birth [4], without proper backup mechanisms to facilitate referral of patients from first level facilities; women are likely to continue dying from complications of pregnancy.

There are considerable gains that are associated with an improved functional transport system [69]. An intervention study to reduce the risk of maternal death associated with obstetric complication which was conducted in Mali between 2003 and 2006, the researcher reported that during the study period, the crude case fatality rate for maternal deaths reduced from 10.1% to 5.13% [69]. Serious consideration needs to be given to improvement of transportation in order to improve the referral process and to reduce deaths from delays.

5.5 Lack of supervision and feedback

Importance of supervision in delivery of health care services need not be overemphasized; it is a requirement not an option. Supervision ensures patients' safety, prevents adverse effects and improves clinical outcomes. Furthermore, supervision promotes acquisition of competence and confidence for independent practice [70]. In this study health care providers reported receiving little or no supervision at all; and this had negative implications on care given to patients. Due to lack of supervision in this study health care providers adhered to their old practices which compromised the quality of care given to patients despite availability of guidelines for new practices. It is necessary that health care providers at this setting receive supervision to ensure adherence to evidence-based practice.

However, lack of supervision in the current study may be attributed to lack of financial resources, human resources and lack of knowledge on how best to do a proper constructive supervision. The findings on lack of supervision in this study support what was previously reported by other studies. In a study on health workers' perspectives on improving motivation among primary health care workers in Tanzania, the researchers reported that lack of supervision and feedback demoralized health care providers and made them feel unappreciated [22]. Similarly, Hassan and Wick [23] in 2006, reported that lack of supportive supervision and limited knowledge of

evidence-based practice, and being subordinate made health care providers feel powerless to effect any change [23].

On the other hand, lack of feedback from the referral facility in this study raised issues of professionalism and inter-facility relationships. Just like supervision, feedback creates a mutual understanding between two entities. Giving feedback to health care providers at the first level facility will help them reflect and improve on their practices for the benefit of future patients. Similarly, if patient care is improved at the first level facility, congestion at the referral facility will be reduced because some cases will have been managed effectively at the first level facility resulting in less referral of patients. Additionally, well managed patients have improved outcomes at the referral facility. Unfortunately, the manner in which feedback is currently being given is unsupportive and unproductive and it demoralizes the health care providers. Demoralized health care providers cannot provide quality care to patients. Lack of feedback from referral facilities was also reported by Manongi, et al in 2006 [22].

5.6 Patients' inability to recognize pre-eclampsia and eclampsia

The inclusion of patient participants was not necessarily to evaluate the quality of care received, but to determine from where they were referred, ability to recognize problem, description of pre-referral care that was received and their experience with referral. Even though there were only few interviews conducted with the patients, the information they shared was helpful with establishing continuity of care from first level facility to referral facility. In this study, therefore, it was observed that there generally seemed to be limited knowledge about pre-eclampsia and eclampsia at individual and community level. This may indicate that women are not educated about pre-eclampsia and eclampsia. Lack of awareness may be a contributor to delay in seeking appropriate medical help [44]. There is need to teach pregnant women on danger signs of pre-eclampsia to help in early detection.

5.7 Evaluation of the study

This study has both strengths and limitations. The strengths are that the findings of the study have answered the research questions using qualitative research approaches. Triangulation was applied throughout the data sources, thus providing a self-validated data, findings and conclusions. The

study has clearly demonstrated the importance of triangulation in the social dynamic conditions prevalent in the field. Triangulation has also demonstrated how complex the management of pre-eclampsia and eclampsia is and that further study is urgently required if health workers are to be assisted in the provision of first level health care to pregnant women.

The complexity of the findings supports the argument for using different data sources. For example, it would not have been useful to ask the health workers at the health centres only to identify the challenges of managing pregnant complications, because the positive factors could have been exaggerated or even invented while negative factors would have been conveniently overlooked [71]. Furthermore, management of the conditions might have been taking place at the health centres which the health workers at the referral hospital were not aware of because such activities had taken place slowly over a long period of time. That is why concerns such as these were addressed by using semi-structured interviews for data collection from different key participants. Therefore, using one data source to collect data in these circumstances was not considered reasonable.

The data is remarkably diverse, providing rich and complex findings on the management of the complications of pregnancy, which was demonstrated by key participants. At the same time, it was possible to identify a number of common issues or concerns, which emerged from different data sources. The commonalities of issues in the management of pre-eclampsia and eclampsia among health workers at the health centre and at the referral hospital were a positive outcome because they demonstrated the extent to which different health workers at different levels had similar perceptions concerning the management of pre-eclampsia and eclampsia.

On the other hand, the study design and methods that determined the sample sizes and sampling procedures of the health workers in Blantyre made the results generalizable only to participants who share similar characteristics and settings. In short, the findings of this study are tentative as they are inductively developed, prone to subjectivity and subject to modification through subsequent research findings. Similarly, although they may have a wider applicability in the field of pregnancy management, they can only be generalized to the sample under study.

Researchers of pre-eclampsia and eclampsia have tended to examine more at a single management level rather than the multilevel management of the conditions. Consequently, little had been done to establish how various levels of management influence each other in the provision of quality health care to pregnant women. For this reason, the researcher had to construct her own procedures, which were rigorously validated through pilot testing within the period of study.

A number of questions arise from the methods used calling for an alternative approach if this study was to be conducted again. For example, investigating the management of pre-eclampsia and eclampsia using case study design of a centre would provide additional insight into centre activities and their usefulness in managing pre-eclampsia and eclampsia. A case study would involve an exploration of a case such as a “programme, an event, an activity, or individuals” (52) using different data collection methods, within a specific setting and time frame. Examining such cases would enable the researcher to look deeper into the nature of the management activities using additional data collection methods such as participant observation to describe the phenomenon in more detail.

In addition, since first level health care seeks to manage the conditions before the patient is referred to hospital, gathering quantitative data in the form of test scores and qualitative data that explores management skills would provide a better understanding of the relationship between conditions and the care provided[59].

In conclusion, the findings of this study are not in conflict with those of other earlier studies on pre-eclampsia and eclampsia. Instead, it offers a further dimension to the understanding of the complexity of the interplay among policy, theory and practice in the management of the management of the conditions, given the harsh conditions prevalent in primary health care systems in most developing countries such as Malawi. First level health care is more effective where health workers enjoy high professional and material support. The findings I have presented here are but a simplified theory that explains the complex process of the management of the pre-eclampsia and eclampsia

In the next chapter conclusion for this research will be done together with the recommendations.

CHAPTER SIX

CONCLUSION

6.0 Introduction

In this last chapter of the paper, presentation of recommendations, conclusion and areas for further research is done basing on the study findings.

6.1 Recommendation

Basing on the crucial issues emerging from the current study findings and discussion the following recommendations are made.

- It was observed in this study that health care providers have the knowledge but there are limitations in their competences. There is need for skill building among all staff that are involved in the management of patients with pre-eclampsia and eclampsia. This would be effective if it is coupled with regular monitoring and supportive supervision. Since eclampsia is a rare condition, health care providers may benefit from allocation to referral hospitals where these cases are common.
- The study also revealed that there was scarcity of essential resources for management of patients with pre-eclampsia and eclampsia which compromised the care of these patients. The scarcity of some items like blood pressure machines in this study was partially due to poor quality of the items. There is need for health centres to be supplied with essential and durable essential resources for management of patients with pre-eclampsia and eclampsia.
- Transportation is very crucial in prevention of deaths from delays in accessing emergency care. There is need for the authorities to seriously consider increasing number of ambulances to enhance speedy referral of patients to the referral facility.
- The findings of the study revealed that health workers were rarely supervised in the management of patients with pre-eclampsia and eclampsia. Supervision of health workers at first level facilities is very important considering that some complications of pregnancy are irreversible and need handled with care. Proper management of patients with pre-eclampsia and eclampsia at the first level of care has double gains; in that two lives will be saved. There is need for regular supportive supervision to ensure that health care

providers develop competence, not only in the management of pre-eclampsia and eclampsia but of other obstetric complications.

- The study revealed that feedback was not given to first level health care providers for the patients they send to the referral hospital. The referral facility needs to give regular feedback to the health centres to help them reflect on the care they offer to patients. While it can be appreciated that doing that for every patient could be difficult, the critical near misses must be sources for learning opportunity for the first level health care providers. For example, instead of always doing a maternal death audit review, all crucial cases referred in a month can be compiled, and organize a refresher for health care providers at the first level basing on those cases. And this must be followed up to see how patients are managed following such focused refresher. Therefore, there is need for the referral hospitals to acknowledge the effort put in during the first level health service provision by health workers and provide the necessary feedback to encourage them to improve the services.
- Shortage of staff is a long standing problem in Malawi, and was also reported in the present study. The government's efforts to address the situation must be acknowledge. However, there is need to continue and intensify training of nurses midwives since they are the ones who are very few.

6.2 Areas for further research

In summary, the findings indicate that attention to understanding signs and symptoms of pre-eclampsia and eclampsia as well as factors which precipitate the complication is an important area of further research. Patients' knowledge and beliefs about such conditions within social and cultural context is an interesting and an integral part of the day-to-day management of the pre-eclampsia and eclampsia. This research has several implications for the future. First, the research topic is certainly pertinent to the management of other types of complications arising from pregnancy in the patients' homes, at the health centres and at the referral hospitals. While this study looked at first level management of the pre-eclampsia and eclampsia within one district, subsequent studies could just as effectively focus on other single districts. With either research approaches (studying patients in their homes or replicating the study in another single district), there would be opportunity to synthesize a model perspective for the management of pre-

eclampsia and eclampsia. The management model would allow for rich, descriptive insights to the research questions and should be considered in subsequent studies. Second, a study that focuses on how first level health provision ultimately affect the subsequent outcome of referral cases would be interesting. Such a study would include a longitudinal approach, following the dynamics of the handling process of individual patients until the referral was complete. The results of the longitudinal study could indeed provide a template of effective pre-referral management of the conditions by determining which strategies worked and which did not in relation to this study area. This type of study and the results lend itself to the area of applied health research. Third, other theoretical approaches to causes of pre-eclampsia and eclampsia could yield even more conclusive health provision results. For example, while many theories are based on quantitative scientific studies (focusing on numbers and frequencies), qualitative research approaches (focusing on words and actions), would bring another dimension of drawing on the patients' experiences before, during and after pre-eclampsia and eclampsia. Fourth, the focus of the research questions in this study lends itself to data analysis from a critical perspective. An issue, such as power and the creation of meaning, should be studied from the perspective of what voices are not heard and/or marginalized in the management of pre-eclampsia and eclampsia. The data that results from this framework could provide for greater application of the findings for first level management of the conditions. Thus, a critical perspective could help in identifying suppressed voices and perhaps eventually result in greater patients' participation. Finally, the scope of the research could be expanded theoretically to include the area of culture. Understanding individual health centres is more important than generalizing from a set of behaviors or values across organizations. Following this line of thinking, data from the current study could be analyzed in order to discover the values health workers hold and how these values in turn impact the meanings created. Data could further be analyzed in terms of the management performances present in the study. For example, the interviews and observations which were conducted in this study might be evaluated more closely in terms of organizational rituals. Other research questions that evoke a cultural perspective would be: How might the organization's existing culture impact the management of patients with pre-eclampsia and eclampsia? And how do the management of patients with pre-eclampsia and eclampsia ultimately impact the culture? The above ideas are representative of a few different directions for further research on this topic.

6.3 Conclusion

This dissertation describes an investigation of factors that hinder management of patients with pre-eclampsia and eclampsia in health centres in Blantyre through the use of an open-ended interviews, focus group interviews and observations. The findings from this study are: health workers demonstrated to have enough knowledge about pre-eclampsia and eclampsia. However, they provided unsatisfactory first level care to the patients because of lack of resources and drugs, under staffing, poor transport for referred patients to hospital. A replication of the study reported here to a larger sample might yield different results. The implications of the problems and challenges identified in this study call for further research more focussed health care policies, and more support for health workers to improve the provision of first level care to patients with pre-eclampsia and eclampsia. The findings of this study should be interpreted with caution because of the small sample size in the study and the fact that patients were not accessed to find their views.

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APPENDIX 1: STANDARD MANAGEMENT OF ECLAMPSIA

SHOUT FOR HELP.

Urgently mobilize all available personnel.

- Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration) while simultaneously finding out the history of her present and past illnesses from her relatives if available.

Do not leave the woman on her own.

- Help her into the left side position and protect her from fall and injury
- Place padded tongue blades between her teeth to prevent a tongue bite, and secure it to prevent aspiration (**do not** attempt this during a convulsion)

If the **woman is unconscious**:

- Check airway and temperature;
- Position her on her left side;
- Check for neck rigidity, if present use appropriate isolation precaution to protect facility staff and other patients in case the woman has meningitis

If the **woman is convulsing**:

- Position her on her left side to reduce the risk of aspiration of secretions, vomit and blood;

- Protect her from injuries (fall), but do not attempt to restrain her;

Since every pregnant woman with convulsion is regarded as having eclampsia until proven otherwise, the health care providers are supposed to give a **loading dose of magnesium sulphate as follows:**

- Insert IV line and give fluids slowly (normal saline or Ringer's lactate) 1 litre in 6-8 hours (3-ml/minute) .
- Give 4-g of magnesium sulphate (20 ml of 20% solution) IV slowly over 20 minutes, and if woman conscious she must be warned that she would experience a warm sensation during the injection.

AND:

- Give 10 g of magnesium sulphate IM: give 5 g (10 ml of 50% solution) IM deep in upper outer quadrant of each buttock with 1 ml of 2% lignocaine in the same syringe.

If unable to give IV, give IM only (loading dose)

- Give 10 g of magnesium sulphate IM: give 5 g (10 ml of 50% solution) IM deep in upper outer quadrant of each buttock with 1 ml of 2% lignocaine in the same syringe.

If convulsions recur

- After 15 minutes, give an additional 2 g of magnesium sulphate (10 ml of 20% solution) IV over 20 minutes. If convulsions still continue, give diazepam and refer urgently.

If referral delayed for long, or the woman is in late labour, continue treatment:

- Give 5 g of 50% magnesium sulphate solution IM with 1 ml of 2% lignocaine every 4 hours in alternate buttocks until 24 hours after birth or after last convulsion (whichever is later).
- Insert a Foleys catheter to monitor urine output.

Before giving the next dose of magnesium sulphate, ensure:

- Knee jerk is present, urine output is greater than 100 ml in 4 hours and respiratory rate is above 16 breaths per minute.
- **DO NOT** give the next dose if knee jerk is absent, urine output is less than 100 ml per 4 hours and respiratory rate is less than 16 breaths per minute.

In case of respiratory depression (breathing less than 16 breaths per minute) after magnesium sulphate, do not give any more magnesium sulphate, instead give the antidote: calcium gluconate 1 g IV (10 ml of 10% solution) over 10 minutes.

- Give appropriate antihypertensive drug

If diastolic blood pressure is more than 110-mmHg:

- Give hydralazine 5 mg IV slowly (3-4 minutes). If IV not possible give IM.
- If diastolic blood pressure remains more than 90 mmHg, repeat the dose at 30 minute intervals until diastolic blood pressure is around 90 mmHg. The dose must be limited to 20 mg in total.
- The patient must be referred as soon as possible
- The woman must be accompanied by a health care provider during transport to ensure appropriate position; and in case of recurrent convulsion during the journey, to give magnesium sulphate and protect her from fall and injury.

In case of in availability of magnesium sulphate or toxicity with magnesium sulphate, valium is recommended as follows:

Loading dose IV

- ☐ Give diazepam 10 mg IV slowly over 2 minutes
- ☐ If convulsions recur, repeat 10 mg.

Maintenance dose

- ☐ Give diazepam 40 mg in 500 ml IV fluids (normal saline or Ringer's lactate) titrated over 6-8 hours to keep the woman sedated but rousable.

- ☐ Stop the maintenance dose if breathing is less than 16 breaths per minute.
- ☐ Assist ventilation if necessary with mask and bag
- ☐ Do not give more than 100 mg in 24 hours.
- ☐ If IV access is not possible (e.g. during convulsion), give diazepam rectally.

Documentation must be done of all findings and the care given to the patient; and immediately refer her.

APPENDIX II: I NTERVIEW GUIDE FOR PATIENTS' I NTERVIEWS

1. Please tell me where you were referred from?

2. What made you seek help from the health centre?

(Probe **for onset of problem, recognition of problem. What did you think the problem was?**)

3. What happened at the health centre when you arrived?

(Probe for: **BP check, urine test, Intravenous infusion, catheterization, drugs given and information about drugs, communication with health care providers, who attended to her (midwife, medical assistant, clinical officer)**)

6. How did you get to Chatinkha?

7. How long did it take to get to this hospital if you can remember?

(Probe for: Problems with transportation)

8. How did you feel being referred to this hospital?

APPENDIX III: I NTERVIEW GUIDE FOR I NTERVIEWS WITH FIRST LEVEL HEALTH CARE PROVIDERS

Introduction: Self introduction, name and general affiliation by researcher.

Demographic information

Ag.....

Marital status.....

Religion.....

Profession.....

Purpose of Interview

We are aware that pre-eclampsia is one of the conditions which are referred to Chatinkha Maternity Unit from most health centres. We are interested in knowing your views about this problem and how it is managed. It will be appreciated if we could spend some time together to discuss this issue.

Interview Begins

Clinical Experience

1. How long have you been working as a (a clinical officer, medical assistant, midwife technician, enrolled midwife, registered midwife.)?
2. How long have you been working at this clinic?
3. What type of obstetric complications do you see at this health centre?
3. How many obstetric complications do you see in a month on average?

4. Tell me about the last time you saw a patient with pre-eclampsia or eclampsia.

Diagnosis

1. How are patients with pre-eclampsia and eclampsia identified at this health centre?
2. Where exactly are patients of pre-eclampsia and eclampsia identified at this health centre?

Management

1. What do you do with patients with pre-eclampsia?
2. What do you do with patients with eclampsia?
3. What effect does the care you provide to these patients have on further management at QECH?
5. What challenges do you meet when taking care of patients with severe pre-eclampsia and eclampsia?
6. What suggestions do you have for improvement of care for patients with pre-eclampsia and eclampsia?
7. What do you have at your health centre to effectively care for patients with pre-eclampsia and eclampsia?
8. Is this adequate? If not, what is lacking in your health centre to effectively care for these patients?
 - If necessary, probe on equipment, and skills, supervision, drugs other

Availability and use of magnesium sulphate and hydralazine

1. Is hydralazine and magnesium sulfate available here? (**Ask if not mentioned on management section**)
2. How do you use magnesium sulphate?
3. How do you choose patients to receive magnesium sulphate?
4. How comfortable are you using this drug?
5. Are there any other drugs you use to treat patients with pre-eclampsia and eclampsia apart from Magnesium sulphate?

APPENDIX IV: INTERVIEW GUIDE FOR HEALTH CARE PROVIDERS AT QECH

Introduction: Self introduction, name and general affiliation

Purpose of Interview

We are aware that preeclampsia is one of the conditions admitted to Chatinkha maternity unit from most health centres. We are interested in knowing your views about the condition of patients on arrival to this unit. It will be appreciated if we could spend some time together to discuss this issue.

Interview Begins

Demographic information

Age

Marital status

Religion

Profession

Clinic Experience

1. How long have you been working as a (a clinical officer, midwife technician, enrolled midwife, registered midwife)?
2. How long have you been working at this hospital?
3. How many obstetric cases do you see in a day on average?

Experience with referred patients of severe preeclampsia and eclampsia

1. Would you please tell me what you understand by preeclampsia and eclampsia?
2. The records indicate that yesterday you admitted a patient with severe preeclampsia /eclampsia from the health centre; would you please tell me about the patient?
 - Probe for condition of patient on arrival, escort from health centre, intravenous infusion, blood pressure check, urinary catheter, documentation of what was done at the health centre)

Instruction: *If patient was sent from health centre without prior care ask the following questions*

3. What do you think made the patient arrive in the condition you just described?
4. How did the condition of the patient affect your provision of care?
5. In your opinion, how best would you want patients with severe pre-eclampsia or eclampsia to be managed before referral to this hospital?
6. What challenges if any, do you think health care staff at the health centres face when trying to care for patients with pre-eclampsia and eclampsia?
7. What should be done to improve management of patients with severe pre-eclampsia and eclampsia at the health centres?
8. How was the patient managed when she got here?

Thank you for participating in this study.

APPENDIX V: FOCUS GROUP DISCUSSION GUIDE

25TH NOVEMBER, 2012

TIME: STARTED

TIME: FINISHED

Participant characteristics

Characteristic	Total number
Enrolled nurse midwife	1
Nurse midwife technician	5
Married	5
Single	1
Age range	25-56
Work experience range	1 -26

QUESTIONS

PRE-ECLAMPSIA AND ECLAMPSIA AND USE OF MAGNESIUM SULFATE

- How often do you see patients with pre -eclampsia and eclampsia in your health centres?
- What do you do when you receive a patient with pre -eclampsia?
- What do you do when you receive a patient with eclampsia?
- How does the care you give benefit the patients and the people who receive them at the referral centre?
- What has been your experience with the use of Magnesium sulphate? (**Which patients get Magnesium sulphate?**)
- How do you feel using Magnesium Sulphate? (**Factor that hinder or facilitate use of Magnesium sulphate**)

- **What other drugs do you use to manage patients with pre-eclampsia and eclampsia?**
Probe on hydralazine and policy on availability in health centres)
- What challenges do you meet when managing patients with pre-eclampsia and eclampsia?

TRANSPORT ISSUES

How do you ensure safety of patients with eclampsia in your facilities and IN TRANSIT to Queens?

SUPERVISION AND FEEDBACK

- What supervision do you receive from the DHO for complications such as pre-eclampsia and eclampsia?
- What supervision would you like to have? (**Frequency, type**)
- What feedback do you receive for patients you send to Queens?
- What feedback would you like to receive when you send patients to Queens?

SUPPLIES

How often do you order supplies from DHO?

Probe: BP machines

APPENDIX VI: INTERVIEW GUIDE FOR PATIENTS CHICHEWA VERSION

1. Kodi munatumizidwa kuchokela chipatala chakuti?
2. Kodi ndizizindikilo zANJI zomwe zinakupangitsani kuti muganize zopita kuchipatala?
3. Kodi zizindikilo zimenezi munayamba kuziona liti?
4. Kodi mutaona zizindikilo zimenezi mumaganiza kuti lingathe kukhala bvuto lanji?
5. Mutafika kuchipatala chaching'ono anakulandilani ndikukusamalani bwanji?

(Probe for: BP check, urine test, Intravenous infusion, catheterization, drugs given and information about drugs, communication with health care providers, who attended to here (midwife, medical assistant, clinical officer))

6. Kodi munayenda bwanji /munabwela bwanji kuchipatala kuno?
7. Kodi zinatenga nthawi yayitali bwanji kuti mufike kuchipatala kuno ngati mungakumbukile bwinobwino?
8. Kodi munamva bwanji muntima mwanu atakuuzani kuti mutumizidwa kuchipatala chachikulu chino? Probe Chifukwa chiani mumamva choncho?
9. Anakupelekazani ndi ndani pa ulendo wobwera ku Chatinkha kuno?
10. Kodi ndi adokotala ati omwe anakupelekezani pa ulendo wanu wobwera kuno?
(probe for midwife , clinical officer , HAS)

Zikomo kwambiri polowa nawo mkafukufuku

APPENDIX VII: INTERVIEW GUIDE CHICHEWA VERSION - FIRST LEVEL HEALTH CARE PROVIDERS

Introduction: Self introduction, name and general affiliation

Demographic information

Age -----

Marital status-----

Religion-----

Profession-----

Purpose of Interview

We are aware that preeclampsia is one of the conditions that are referred to Chatinkha Maternity Unit from most health centres. We are interested in knowing your views about this problem and how it is managed. It will be appreciated if we could spend some time together to discuss this issue.

Interview Begins

Clinical Experience

1. Mwakhala mukugwira ntchito kwanthawi yaitali bwanji paudindowa (clinical officer, midwife)?
2. Mwagwira ntchito kwanthawi yaitali bwanji pachipatala chino?
3. Kodi ndi mavuto anji omwe mumalandira pa chipatala pano okhuzana ndi uchembere?
4. Kodi ndi amayi angati omwe amagonekedwa ndi bvuto lonkhuzana ndi uchembere patsiku?

5. Kodi pa mwezi mumalandira amayi angati omwe moyo wawo uli pachipsyezo chifukwa cha zovuta zina zobwera chifukwa cha uchembere?
6. Ndiliti lomwe munasamalirako mzimayi woyembekezera wokhala ndi bvuto lothamanga magari?

Diagnosis

1. Amayi woyembekezera womwe ali ndi bvuto lothamanga magari mumawazindikira bwanji?
2. Amayi amene ali ndi bvuto lothamanga magari mumawapeza kuti?

Management

1. Nanga amayi woyembekezera womwe a kukomoka chifukwa chothamanga magari mumatani nawo akafika pachipatala pano?
2. Kodi umu ndi mmene mumawasamalira amayi wothamanga magariwa nthawi zonse kapena pali zina zomwe mumachita powasamalira? Ngati zilipofotokozani?
3. Kodi chisamaliro chomwe mumawapatsa amayi othamanga magari kapena okomoka chifukwa chothamanga magari musanawatumize kuchipatala chachikulu nchofunika bwanji kapena chimawanthandiza bwanji akapita kuchipatala chachikulucho?

Ndi zovuta zANJI zomwe mumakumana nazo posamalira amayi omwe ali ndi bvuto lothamanga magari kapena omwe akukomoka chifukwa chothamanga magari?

4. Kodi inu mukuganiza kuti njira yabwino yosamalira amayi omwe akuthamanga magari kapena kukomoka chifukwa chakuthamanga magari ingakhale yiti?
5. Kodi ndi zinthu ziti zomwe muumagwiritsa ntchito posamalira amayi amenewa?
6. Kodi zinthuzo ndi zokwanira posamalira amayi omwe ali ndi bvutoli?

Probe: Muli ndizosowa zANJI zomwe zimakusokonezani kusamalira bwino amayi omwe akuthamanga kapena kukomoka chifukwa chothamanga magari? (Probe **on equipment, and skills, supervision, drugs, other**)

Availability and use of magnesium sulphate and hydralazine

1. Kodi muli ndi hydralazine ndi Magnesium sulfate?

(Ngati ayi, kodi nthawi zina mumakhala naye?,ndiliti lomwe munalandira/ order mankhwalawa)

2. Mumasankha bwanji wodwala woyenera kulandira mankhwalawa?
3. Kodi mankhwalawa mumawagwiritsa ntchito bwanji?
4. Kodi pali mavuto ena ali onse omwe mumakumananawo chifukwa chogwiritsa ntchito mankhwalawa?
5. Kodi ndi chiyembekezo changi kapena nkhawa zANJI zomwe mumakhala nazo pogwiritsa ntchito mankhwalawa?
6. Kodi chiyembekezo kapena nkhawa zimenezi zimakhuza bwanji dongosolo longwiritsa ntchito kapena loperekela mankhwalawa?
7. Kodi pali mankhwala enanso omwe mumagwiritsa ntchito posamalira amayi omwe akuthamanga magari kapena kukomoka chifukwa chothamanga magariwa?

APPENDIX VIII: INTERVIEW GUIDE CHICHEWA VERSION - HEALTH CARE PROVIDERS AT QECH

Introduction: Self introduction, name and general affiliation

Purpose of Interview

We are aware that preeclampsia is one of the conditions admitted to Chatinkha Maternity Unit from most health centres. We are interested in knowing your views about the condition of patients on arrival to this unit. It will be appreciated if we could spend some time together to discuss this issue.

Interview Begins

Demographic information

Age-----years

Marital status-----

Religion-----

Profession-----

Clinic Experience

1. Mwakhala mukugwira ntchito kwanthawi yaitali bwanji ngati(doctor, midwife, etc) ?
2. Mwagwira ntchito kwanthawi yaitali bwanji pachipatala chino?

3. Ndi amayi angati omwe amagonekedwa pachipatala pano chifukwa cha mabvuto wokhudzauchembere pa tsiku?
4. Kodi ndi amayi angati omwe amagonekedwa pamwezi chifukwa choti moyo wawo uli Pachipsyezo chifukwa chauchembere?

Experience with referred patients of severe preeclampsia and eclampsia

1. Kodi mumamvetsa bwanji zamatenda wothamanga magari kapena kukomoka chifukwa cha kuthamanga kwa magari kwa a amayi woyembekezera (pre-eclampsia and eclampsia)?
2. Kawundula akuonetsa kuti dzulo munagoneka mayi wodwala matenda wothamanga magari kapena kukomoka chifukwa cha kuthamanga magari wochokela ku health centre. Mungandifotolezereko zammene analiri wodwala ameneyu nthawi imene amafika kuno?

Probe for condition of patient on arrival, escort from health centre, intravenous infusion, blood pressure check, urinary catheter, documentation of what was done at the health centre

3. **(Ngati wodwala sanali bwino, funsani)** Kodi mukuganiza kuti mayi ameneyu anafika ali wodwalika choncho chifukwa chiyani?
4. Kodi m'mene anafikila wodwalayu makamaka mmene amawonekera (condition) mukuganiza kuti zinakuthandizani bwanji kapena zinabwenzeletsa mbuyo bwanji kasamalidwe kawodwala ameneyu ?
5. Kodi mmaganizo anu mukuona kuti amayi amenewa azisamalidwa bwanji asanatumizidwe kuchipatala chachikulu chino?
6. Kodi mukuganiza kuti ndi zobvuta zANJI zomwe anamwino kapena ma clinical officer akuzipatala zing'onozing'ono (health centre) amakumana nazo posamalira amayi omwe ali ndibvuto lothamanga magari kapena womwe akukomoka chifukwa chothamanga magari asanawatumize kuno ku Chatinkha?

7. Kodi mukuganiza kuti anthu ogwira ntchito ku zipatala zazingo'nozing'onowa angathandizidwe bwanji kuti azitha kusamalira bwino amayi woyembekezera omwe apezeka ndi bvuto lothamanga magazi asanatumizidwe ku Chatinkha kuno?

Zikomo kwambiri polowa nawo mkafukufuku

APPENDIX IX: MAIN AND SUB- THEMES

Main category	Sub themes
Knowledge about condition	Ability to describe conditions Ability to recognise condition Ability to detect condition
Management of preeclampsia	Counselling and regular follow up Antihypertensive and referral Referral to hospital
Management of eclampsia	Resuscitation with iv fluids and referral Resuscitation with iv fluids, magnesium sulphate and refer
Perceived benefit of pre-referral care	Prevention of further complications like injury, convulsions, deaths Facilitates care at referral facility Reduces work for staff at referral facility Fulfilment of personal responsibility as health centre staff
Challenges to proper management	
Patient related	Knowledge about condition Delay in reporting to health centre Noncompliance to referral
Health professional related	Lack of refresher courses Rarity of condition leading to forgetfulness Lack of experience with management of condition Fears and poor perceptions about magnesium

	sulphate
Related to health centre capacity	Lack of resources- essential resources e.g.Bp machines, drugs, albumin sticks Shortage of staff Transportation problems
Related to health centre administration	Lack of regular and supportive management Lack of feedback from referral facility

APPENDIX X: REK APPROVAL

Region:	Saksbehandler:	Telefon:	Vår dato:	Vår referanse:
REK sør-øst	Hege Holde Andersson	22845514	04.07.2012	2012/995 REK sør-øst B
			Deres dato:	Deres referanse:
			22.05.2012	

Vår referanse må oppgis ved alle henvendelser

Johanne Sundby
Universitetet i Oslo

2012/995b Svangerskaphypertensjon i Malawi

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk i møtet 13.06.2012.

Forskningsansvarlig: Universitetet i Oslo
Prosjektleder: Johanne Sundby

Prosjektomtale

The study seeks to describe first level health care providers' perspectives on the management of patients with preeclampsia and eclampsia before referral. Management in this case will mean identification, diagnosis, decision to refer, initial care before referral, arrangements for referral, referral and companionship during referral.

In-depth interviews and focus group discussions will be conducted with purposively selected nurse /midwives, midwife technicians, student midwives and student doctors, clinical officers, and postnatal mothers at QECH and in purposively selected health centres.

It is hoped that the findings from the study will help to inform authority on areas that require improvement for better management of patients with preeclampsia and eclampsia. The study will also help first level health care providers to become aware of their own practices, strength and weaknesses in the management of preeclampsia and eclampsia.

Komiteens vurdering

Formålet med prosjektet er å beskrive helsearbeiderne i første linje sine perspektiver på forebyggende arbeid for å unngå svangerskapsforgiftning og behandling av pasienter med svangerskapsforgiftning. Intensjonen er at studien skal kunne bidra til å informere myndighetene i Malawi om hvordan forbedre det forebyggende arbeidet og behandlingen når det gjelder svangerskapsforgiftning samt gjøre det behandlende personell mer oppmerksom på egen praksis.

Det skal gjøres dybdeintervjuer og fokusgruppeintervjuer med forskjellige grupper av behandlingspersonell i Blantyre District i Malawi. Distriktet har ikke eget sykehus. Ingen pasienter skal inngå i studien. Pasientopplysninger skal diskuteres, men slik at pasientene ikke skal kunne identifiseres. Rekruttering av deltakere (utvalgte helsesentre) skal skje ved at pasientkasus beskrives.

Det opplyses om at det skal søkes godkjenning av prosjektet både i Norge og i Malawi.

Slik prosjektet er beskrevet er det ikke sykdom og helse som skal studeres, men snarere helsearbeidere i Malawi sine perspektiver på forebyggende arbeid i relasjon til behandling av pasienter med

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REK sør-øst og ikke til enkelte
personer

Kindly address all mail and e-mails
to the Regional Ethics Committee,
REK sør-øst, not to individual staff
persons

Region: REK sør-øst	Saksbehandler: Hege Holde Andersson	Telefon: 22845514	Vår dato: 04.07.2012	Vår referanse: 2012/995 REK sør-øst B
			Deres dato: 22.05.2012	Deres referanse:

Vår referanse må oppgis ved alle henvendelser

Johanne Sundby
Universitetet i Oslo

2012/995b Svangerskaphypertensjon i Malawi

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svangerskapsforgiftning. Komiteen vurderer at prosjektet ikke faller inn under helseforskningsloven som forutsetter at formålet med prosjektet er å skaffe ny kunnskap om helse og sykdom.

Det er mulig at den beskrevne diskusjonen som skal omhandle reelle pasientsituasjoner vil føre til at forskergruppen får kjennskap til opplysninger som potensielt kan knyttes til enkeltpersoner. Komiteen antar at dette er opplysninger som er underlagt nasjonale regler om taushetsplikt.

Komiteen kan imidlertid ikke se at forskningen er avhengig av at REK gir fritak fra taushetsplikt etter helsepersonelloven eller forvaltningslovens bestemmelser. Tilgang vil i dette tilfellet være regulert av nasjonalt regelverk i Malawi.

For å gjennomføre prosjektet trengs det etter dette ingen særskilt godkjenning fra REK.

Vedtak

Prosjektet faller utenfor komiteens mandat, jf. helseforskningsloven § 2. Prosjektet kan gjennomføres uten godkjenning av REK.

Komiteens vedtak kan påklages til Den nasjonale forskningsetiske komité for medisin og helsefag, jf. helseforskningsloven § 10, 3 ledd og forvaltningsloven § 28. En eventuell klage sendes til REK sør-øst B. Klagefristen er tre uker fra mottak av dette brevet, jf. forvaltningsloven § 29.

Komiteens avgjørelse var enstemmig.

Vi ber om at alle henvendelser sendes inn via vår saksportal: <http://helseforskning.etikkom.no> eller på e-post til: post@helseforskning.etikkom.no. Vennligst oppgi vårt referansenummer i korrespondansen.



Med vennlig hilsen

Stein Opjordsmoen Ilner
Professor dr. med
Komitéleder

Øyvind Grønlie Olsen
Saksbehandler

Kopi til: Universitetet i Oslo ved øverste administrative ledelse

APPENDIX XI: COMREC CERTIFICATE OF APPROVAL

	
CERTIFICATE OF ETHICS APPROVAL	
This is to certify that the College of Medicine Research and Ethics Committee (COMREC) has reviewed and approved a study entitled:	
P.07/12/1253- Management of Preeclampsia and Eclampsia in Blantyre, Malawi version 1.0 dated 10th July 2012	
On 5th September 2012	
As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC as indicated on the next page	
 Dr. G. Kahinda, Vice-Chairperson (COMREC)	<div>Approved by College of Medicine 05 SEP 2012 (COMREC) Research and Ethics Committee</div> <div>Date 05 September 2012</div>

APPENDIX XII: LETTER OF PERMISSION FROM BLANTYRE DISTRICT HEALTH OFFICE

Telephone: Blantye 01875332 / 01877401
Fax: 01875430

Communication should be addressed to:
The District Health Officer



In reply please quote No.
MINISTRY OF HEALTH AND POPULATION
DISTRICT HEALTH OFFICE
P/BAG 66
BLANTYRE
MALAWI

5th July, 2012

Ms J. Changole
University of Malawi
College of Medicine
P/Bag 360
Blantyre 3

Cc : The Officer In-charges, All Health Centres, BDHO

Re : **PERMISSION TO CONDUCT A RESEARCH STUDY ON MANAGEMENT OF PREECLAMPSIA AND ECLAMPSIA IN BLANTYRE : PERSPECTIVES FROM FIRST LEVEL HEALTH CARE PROVIDERS**

The DHO's Office has granted you permission to conduct the above study in the Health facilities that refer obstetric patients to Chatinkha Maternity Unit of Queen Elizabeth Central Hospital.

By copy of this letter the In-charges are notified of this.

Wishing you all the best.

A handwritten signature in black ink, appearing to be 'P. M. Z. Mwasigala'.

P. M. Z. Mwasigala (DNO)
for : **DISTRICT HEALTH OFFICER**

APPENDIX XIII: LETTER OF PERMISSION FROM QUEEN ELIZABETH CENTRAL HOSPITAL

Telephone: (265) 01 874 333 / 677 333
Facsimile: (265) 01 876928
Email: queenshosp@globemw.net

All communications should be addressed to:
The Hospital Director



In reply please quote **No.**

QUEEN ELIZABETH CENTRAL HOSPITAL
P.O. BOX 95
BLANTYRE
MALAWI

Ref No. QE/10

5th July, 2012

Josephine Changole
Kamuzu College of Nursing
P.O. Box 415
BLANTYRE


Dear Sir/Madam

PERMISSION TO CONDUCT A RESEARCH STUDY

This is to inform you that management has no objection for you to conduct a research study on "Management of preeclampsia and eclampsia in Blantyre: perspectives from first level health care providers" at Queen Elizabeth Central Hospital.

All the best in your studies.

Yours faithfully,


T.N. Soko (Mrs.)
CHIEF NURSING OFFICER
FOR: HOSPITAL DIRECTOR



RECEIVED
CHIEF NURSING OFFICER
FOR: HOSPITAL DIRECTOR

APPENDIX XIV: CONSENT FORM FOR HEALTH CARE PROVIDERS

Title: Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi

Statement of the study

Purpose

I invite you to participate in this study of “Management of preeclampsia and eclampsia: perspectives from first level health care providers”

The objective of this study is to describe first level health care providers’ perspectives on the management of patients with preeclampsia and eclampsia before referral to the hospital and to identify gaps in, and challenges to the management of patients with preeclampsia and eclampsia at the first level of care

Procedures

Specifically, I will ask you for information about your work in relation to preeclampsia and eclampsia, things that make the management of patients with preeclampsia and eclampsia easier for you, barriers to proper management of preeclampsia and eclampsia, what you would want improved to facilitate better management of preeclampsia and eclampsia. I will also ask you some background information which will not include your name.

Should you agree to take part in the study, there is a chance that I will contact you again to re-interview in order to clarify any information which you might have given me in the initial interview.

The interview will take approximately 45 to 50 minutes of your time and you may find some of the questions asked psychologically disturbing.

The information that you provide during the study will be kept confidential. Only the interviewer and researchers will have access to the audio taped interviews and the transcripts thereof. This information will be destroyed on completion of the study.

Benefits of the study

By participating in this study and answering our questions, you will help to increase our understanding on how patients of preeclampsia and eclampsia are managed at this level of care. It would also help you as a health care provider to reflect upon your own efforts in the management of preeclampsia and eclampsia. We hope that the results of the study will improve the quality of care rendered to patients with preeclampsia and eclampsia.

Your participation in this study is voluntary and you have the right to refuse to participate or answer any questions with which you feel uncomfortable. If you change your mind about participating during the course of the study, you have the right to withdraw at any time. The decision to withdraw will not affect your work or position in anyway.

If there is anything that is unclear or you need further information, I shall be delighted to provide it.

Do you have any questions that you would like me to clarify?

Declaration of volunteer:

I have understood that the purpose of the study is to describe first level health care providers' perspectives on the management of patients with preeclampsia and eclampsia before referral to the hospital and to identify gaps in, and barriers to the management of patients with preeclampsia and eclampsia at the first level of care

I realize that I might be contacted again in a few weeks to be re-interviewed for further clarification of the information I give in the initial interview.

I have read the above information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without in any way affecting my work position.

Signature of volunteer:

Signature of investigator:

Date: _____

Date: _____

If you have any further questions or concerns about the study contact me or my supervisor on the following addresses

Ass.Professor A.Malata .Kamuzu College of Nursing.

Phone Number:0999963373

Or Josephine Changole .College of Medicine, Department of Obstetrics and Gynaecology

Phone Number: 0888311537

If you have any safety concerns about the study, please do not hesitate to contact: the **COMREC secretariat at College of medicine, P/Bag 360, Chichiri. Phone: +265 1 874 377**

APPENDIX XV: CONSENT FORM FOR PATIENTS

Title: Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi

Statement of the study

Purpose

I invite you to participate in this study of “Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi”

The objective of this study is to describe first level health care providers’ perspectives on the management of patients with preeclampsia and eclampsia before referral to the hospital and to identify gaps in, and challenges to the management of patients with preeclampsia and eclampsia at the first level of care.

Procedures

Specifically, I would like your permission to review your records to determine if you are eligible for the study or not. Should you be eligible for the study, I will ask you for information about your experience with care at the health centre before you were referred to this hospital. The interview will take approximately 45 to 50 minutes of your time.

The information I will obtain from your records and that you provide during the study will be kept confidential. Only the interviewer and researchers directly involved in this study will have access to the audio taped interviews and the transcripts thereof. This information will be secured in a password protected computer on completion of the study.

Benefits of the study

By participating in this study and answering our questions, you will help to increase our understanding on how patients of preeclampsia and eclampsia are managed at the health centre. We hope that the results of the study will improve the quality of care rendered to patients with preeclampsia and eclampsia.

Your participation in this study is voluntary and you have the right to refuse to participate or answer any questions which you feel uncomfortable with. If you change your mind about participating during the course of the study, you have the right to withdraw at any time. The decision to withdraw will not affect your care in anyway.

If there is anything that is unclear or you need further information, I shall be delighted to provide it.

Do you have any questions that you would like me to clarify?

Declaration of volunteer:

I have understood that the purpose of the study is to describe first level health care providers’ perspectives on the management of patients with preeclampsia and eclampsia before referral to

the hospital and to identify gaps in, and barriers to the management of patients with preeclampsia and eclampsia at the health centre

I have read the above information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without in any way affecting the care rendered to me.

Signature of volunteer:

Signature of investigator:

Date: _____

Date: _____

If you have any further questions or concerns about the study, you can contact me or my supervisor on the following addresses

Associate Professor A. Malata .Kamuzu College of Nursing.

Phone Number: 0999963373

Or Josephine Changole .College of Medicine, Department of Obstetrics and Gynaecology

Phone Number: 0888311537

If you have any safety concerns about the study, please do not hesitate to contact: the **COMREC secretariat at College of medicine, P/Bag 360, Chichiri. Phone: +265 1 874 377**

APPENDIX XVI: CONSENT FORM FOR HEALTH WORKERS CHICHEWA VERSION

Title: Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi

Kalata yopempha chilolezo

Cholingacha kafukufuku

Tikukupemphani kuti mulowe nawo mu kafukufuku wofuna kumva maganizo awogwira ntchito pa health centre pa zakasamalidwe ka amayi omwe apezeka ndi bvuto lothamanga magari kapena kukomoka chifukwa cha kuthamanga magari asanatumizidwe ku chipatala chachikulu. Cholinga ndi chofuna kudziwa zinthu zomwe zimakulimbikitsani ndi zinthu zomwe zimakufowoketsani pa kasamalidwe ka amayi woyembekezera amene a pezedwa ndi bvuto lothamanga magari asanatumizidwe kuchipatala chachikulu.

Ndondomeko ya kafukufuku

Makamaka tikufuna kudziwa zomwe mumachita posamalira amayi woyembekezera omwe apezeka ndi bvuto lothamanga magari kapena kukomoka kumene chifukwa cha bvutoli. Tifunanso kudziwa zinthu zomwe zimakuthandizani kuti muwasamalile bwino amayiwa komanso zinthu zomwe zimakufowoketsani. Tifunanso kudziwa zinthu zomwe mungakonde kuti zichitike kuti ntchito yosamalira amayi omwe apezeka ndi bvutoli yikhale yopambana. Tikufunsaninsu zinthu zina zokhudzana ndi inu, komasitisowa kudziwa dzina lanu. Ngati mubvomera kutenga nawo mbali mu kafukufuku ameneyu, mwina pangadzafunike kuti ndidzacheze nanunso pa zinthu zomwe mwina sizinamveke bwino pa kukambilana kwathu koyamba.

Zokambilana zathu zidzatenga pafupifupi mphindi makumi anayi ndi zisanu kapena makumi asanu (45 to 50 minutes) yanthawi yanu. Pofuna kuti tisaphonye china chilichonse pazokambirana zathu, ndikukupemphani kuti mundilore kujambula zokambiranazi pa tape recorder iyi. Mawu anu sadzaulutsidwa pawireless kapena pa kanema wina aliyense.

Mwina ndi mwina mutha kupeza kuti mafunso ena atha kukhala okukhudzani/okusautsani m' maganizo. Ndifunakupepeselatu ngati izi zingachitike chifukwa sicholinga change kutelo. Ndikoyenera kukudziwitsaninsu kuti zonse zomwe titakambilane pano zidzakhala za chinsisi chenicheni. Wokhawokha okhudzidwa ndi kafukufukuyu ndi omwe angapeze mwayi wogwilitsa nchito zotsatila zakafukufukuyu. Zokambiranazi zidzalembedwa ndi kusungidwa bwino lomwe mu komputa yomwe ili ndi chitetezo chokwanira kusukulu yaukachenjede ya Oslo mdziko la Norway, komwe ndikuchita ma phunziro omwe ndikuchitira kafukufuku ameneyu.

Phindu la kafukufuku ameneyu

Potenga nawo mbali mu kafukufukuyu ndi kuyankha mafunso athu mudzatithandiza kumvetsa bwino momwe amayi abvuto lothamanga magari kapena lokomoka chifukwa chothamanga

magazi amasamaliridwa pa chipatala chino asanatumizidwe ku chipatala chachikulu. Zidzathandiza inunso ngati wosamalila odwala kulingalira ntchito yabwino imene mumagwira polingalira ndi kudziipeleka kwanu posamalira odwala amenewa. Tili ndi chikhulupiro kuti zotsatila zakafukufukuyu zitithandiza kupititsa pa tsogolo kasamalidwe ka amayi omwe ali ndibvuto lothamanga magazi kapena kukomoka chifukwa chothamanga magazi.

Simukukakamizidwa kuyankha funso liri lonse lomwe simuli wokonzeka kuyankha kapena funso lomwe lingakusowetseni mtendere mu mtima. Dziwani kuti ndinu womasuka kusiya kafukufukuyu nthawi ina iliyonse ngati kungafunike kutero. Dziwaninso kuti kutuluka mkafukufuku sikudzasokoneza kagwiridwe kantchito yanu kapena udindo wanu pa ntchito.

Kodi muli ndi funso lina lililonse pa zomwe ndakufotokozelanizi kapena zomwe mwawelengazi?

Kuvomeleza kulowa mu kafukufuku

Ndamvetsa kuti cholinga cha kafukufukuyu ndi kufuna kumva maganizo awogwira ntchito ku health centre pa zakasamalidwe ka amayi omwe apezeka ndi bvuto lothamanga magazi kapena kukomoka chifukwa cha kuthamanga magazi asanatumizidwe kuchipatala chachikulu.

Ndikuzindikila kuti ndikhonza kudzayenderedwanso ndi kufunsidwa mafunso ena popitiliza kufotokozera motsindika zokambilana zokhudza kafukufukuyu potsatila zokambilana zathu zoyamba.

Ndawerenga dogosolo lonse lakafukufuku ameneyu ndipo ndakhalanso ndi mwayi ofunsa mafunso pa dongosololi ndipo ndalandira mayankho omwe ndakhutira nawo. Choncho ndikubvomera mwaufulu ndi mwakufuna kwanga kutenga nawo mbali mkafukufukuyu. Komanso ndikuzindikira kuti ndili ndiufulu wotuluka mkafukufukuyu nthawi yina iliyonse ngati nditafuna kutelo, ndipo izi sizidzasokoneza ntchito kapena udindo wanga pantchito.

Signature of volunteer:

Signature of investigator:

Date:

Date:

Ngati mungakhale ndi mafunso ena okhuza kafukufuyu, musakaike kundifunsa ine kapena aphunzitsi anga pa malamya ali mmusiwa:

Ass.Professor A. Malata .Kamuzu College of Nursing.

Phone Number:0999963373

Or Josephine Changole . College of Medicine, Department of Obstetrics and Gynaecology

Phone Number: 0888311537

Ngati mukufuna kudziwa zokhuza chitetezo chanu pakafukufukuyu, musakayike kuyimba lanya ku **COMREC secretariat ya College of medicine, P/Bag 360, Chichiri. Phone: +265 1 874 377**

APPENDIX XVII: CONSENT FORM FOR MOTHERS CHICHEWA VERSION

Title: Management of preeclampsia and eclampsia: perspectives from first level health care providers

Cholinga cha kafukufuku

Tikukupemphani kuti mulowe nawo mu kafukufuku wofuna kumva maganizo awogwira ntchito pa health centre pa zakasamalidwe ka amayi omwe apezeka ndi bvuto lothamanga magazi kapena kukomoka chifukwa cha kuthamanga magazi asanatumizidwe kuchipatala chachikulu. Cholinga ndichofuna kudziwa zinthu zomwe zimawalimbikitsa ndi zinthu zomwezi mawafowoketsa pa kasamalidwe ka amayi amene apedzedwa ndi bvuto limeneli asana tumizidwe kuchipatala chachikulu.

Ndondomeko ya kafukufuku

Makamaka tikufuna kupempha kuti mutilore kuona nawo mbiri yamatenda anu mmabuku anu akuchipatala kuno kuti tidziwe ngati kuli koyenera kuti mulowe nawo mkafukufuku. Ngati zolembedwazo zikusonyeza kuti muthakulowa nawo mkafukufuku, tidzakupemphani kuti mutithandize poyankha mafunso. Mafunso ake ndi wofuna kudziwa momwe munalandilidwira ndi momwe munasamalidwira mutafika / pezeka ndi bvuto lothamanga magazili kuchipatala chachingo'no(health centre). Ndikufunsaninso zinthu zina zokhudzana ndi inu koma sindidzafuna kudziwa dzina lanu.

Zokambilana zathu zidzatenga pafupifupi phindi makumi anai ndi asanu kapena makumi asanu (45 to 50 minutes) yanthawi yanu. Ndikukupemphani kuti mundilole kuti zokambirana zathu zijambulidwe pa tape recorder iyi kuti tisamphonye china chili chonse chomwe tidzakambirane. Ndikukutsimikizirani kuti zokambiranazi ndi zachinsinsi, ndipo sizidzaulutsidwa pa wireless kapena pa kanema wina aliyense. Ndipo zonse zomwetitakambilane pano zidzakhala zachinsinsi. Wokhawokha okhudzidwa ndi kafukufukuyu ndi omwe angapeze mwayi wogwiritsa ntchito zokambirana kepena zotsatila za kafukufukuyu.

Zokambiranazi zidzalembedwa bwino lomwe mumakina a kompyuta yomwe ili ndi chitetezo chokwanira kusukulu yaukachenjede ya Oslo ku Norway komwe ndikuchita maphunziro omwe ndikupangira kafukufukuyu.

Mphindu la kafukufuku

Potenga nawo mbali mu kafukufukuyu ndi kuyankha mafunso athu mudzatithandiza kumvetsa bwino momwe amayi othamanga magazi kapena okomoka chifukwa chothamanga magazi amasamalidwira pa chipatala chaching'ono asanatumizidwe ku chipatala chachikulu chino.

Tili ndi chikhulupiliro kuti zotsatila zakafukufukuyu zidzatithandiza kupititsa pa tsogolo kasamalidwe kabwino kaamayi omwe ali ndi vuto lothamanga magazi kapena akukomoka chifukwa chothamanga magazi.

Simuliwokokamizidwa kuyankhafunso lomwe simuliokonzeka kutero . Ndipo zindikilani kuti ndinu omasuka kutuluka mkafukufukuyu nthawi ina iliyonse mutafuna kutero. Kutuluka mkafukufuku sikudzasokoneza chisamaliro chanu pachipatala pano.

Kodi muli ndi funso lina lililonse pa zomwe nda kufotokozeranizi kapena zomwe mwawelengazi zokhuzana ndi kafukufukuyu?

Kuvomelezakulowa mu kafukufuku

Ndamvetsa kuti cholinga cha kafukufukuyu ndi kufuna kumva maganizo awogwira ntchito ku health centre pa zakasamalidwe ka amayi woyembekezera omwe apezeka ndi bvuto lothamanga magazi kapena kukomoka chifukwa cha kuthamanga magazi asanatumizidwe kuchipatala chachikulu, pofuna kupititsa patsogolo kasamalidwe kabwino ka amayi womwe apezeka ndivuto limeneli.

Ndawerenga ndi pondakhala ndi mwayi ofunsa mafunso ,ndipo ndalandira mayankho omwe ndakhutiranawo.

Ndikuvomereza mwakufuna kwanga kutenga mbali mkafukufukuyu.Ndipo ndikuzindikira kuti ndili ndiufulu wotuluka mkafukufukuyu nthawi ina iliyonse ngati nditafuna kutelo. Ndipo ndauzidwa kuti kutuluka mkafukufuku sikudzasokoneza mpango'no pomwe chisamaliro chomwe ndikulandira pachipatalapano.

Signature of volunteer:

Signature of investigator:

Date:

Date:

Ngati mungakhale ndi mafunso ena okhuza kafukufuyu , musakaike kundifunsa ine kapena aphunzitsi anga pa malamya ali mmusiwa:

Ass.Professor A. Malata .Kamuzu College of Nursing.

Phone Number:0999963373

Or Josephine Changole . College of Medicine, Department of Obstetrics and Gynaecology

Phone Number: 0888311537

Ngati mukufuna kudziwa zokhuza chitetezo chanu pakafukufukuyu, musakayike kuyimba lanya ku **COMREC secretariat ya College of medicine, P/Bag 360, Chichiri. Phone: +265 1 874 377**